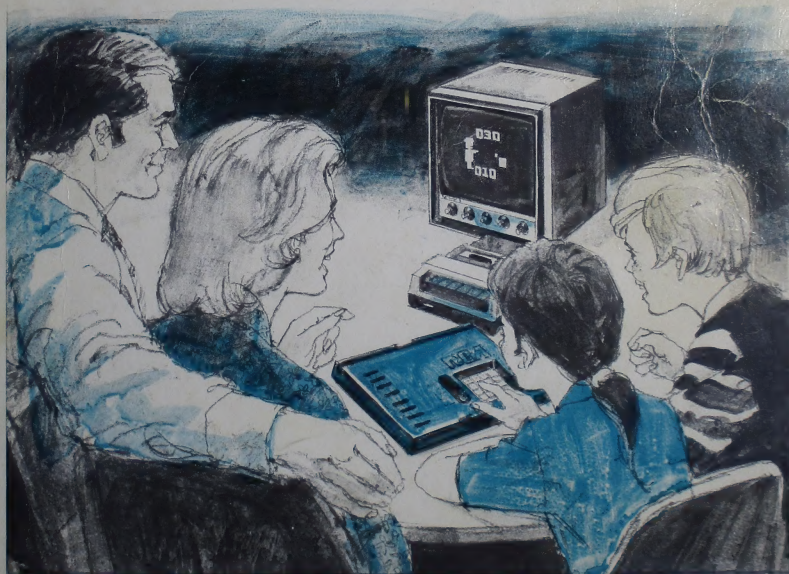


RCA

RCA COSMAC VIP

Game Manual



VP-710

Suggested Price \$10.00

RCA COSMAC

Game Manual

The logo consists of the letters 'VIP' in a stylized, outlined font. Above the 'I' is a small square, and the 'V' and 'P' are connected to it, forming a single graphic element.

RCA COSMAC VIP MARKETING
New Holland Avenue
Lancaster, PA 17604

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Printed in USA/12-78

Foreword

This Manual contains program listings for sixteen games specially designed for use with the **RCA COSMAC VIP** (Video Interface Processor) CDP18S711 or CDP18S022. These games supplement the twenty video games listings provided in the basic Instruction Manual for the **RCA COSMAC VIP**. All sixteen new games require the **CHIP-8** interpreter program which loads at 0000. The games start at 0200 and are eight pages.

The listings for these sixteen games are in the same form as the twenty games in the **RCA COSMAC VIP Instruction Manual**. The first column is the memory location at which the instruction byte in the second column is stored. The comments in the third column, which indicate the function of the instruction byte, are not stored in memory.

When you store these new games, all sixteen will easily fit on a 30-minute cassette. If you run into any problems, go back to your **RCA COSMAC VIP Instruction Manual** for a refresher. If you have been developing your own video games, however, you won't need it.

These sixteen games were developed by the computer hobbyists whose names are given below with the titles of the games they developed and programmed. They hope that you will have as much fun playing them as they did in developing them.

Incidentally, if you have developed and programmed any unique new video games or other similar interesting applications of the **COSMAC VIP** and would like to share them with other hobbyists, tell us about them. We have started our planning for the next edition of the **RCA COSMAC VIP Game Manual** and might be interested in purchasing software that qualifies for publication in it. Contact:

RCA VIP Marketing
New Holland Avenue
Lancaster, PA 17604

RCA COSMAC VIP Games

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1. VIP Pinball

The VIP PINBALL game simulates the action of real pinball machines. The object of the game is to keep your ball in play and score as many points as you can by ball contact with point bumpers. The point value of bumpers changes randomly when hit. Points range from 2 to 9. A score greater than 999 stops the game.

VIP PINBALL can be played by one or two persons. Players take turns scoring points and control flippers on their own keyboard throughout the game. A player can change ball direction with a special key. However, overuse of this feature will result in a "TILT".

How To Play VIP Pinball

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.
3. Select the one-player game with key 1. Select the two-player game with key 2.

4. In the two-player game, players alternate turns. Players get five balls. The number of balls remaining is shown at the right or left of the players score. Your turn to put a ball in play is shown by a flashing digit (balls remaining) on your side of the TV screen.

5. To put a ball in play, press key 1.

6. Press key 4 to control the left flipper and key 6 to control the right flipper.

7. You can press key 0 to reverse the direction of the ball. This feature is handy for saving a ball (outside the flipper range) that will go out of bounds. This feature simulates physically pushing on a PINBALL game cabinet. Pressing key 0 causes the ball to move at high speed. While the ball travels at high speed, key 0 has no effect.

8. If you overuse key 0, you will cause a "TILT" and the game will stop. If the two-player option was selected and the other player has balls left, press key 1 to put a new ball in play.

9. The game is over when either player scores more than 999 points, when both players have "TILT", or when both use all their balls.

```

0200 6E01 VE=01
0202 EEA1 SKIP;VE NE KEY
0204 120E GO 020E
0206 6E02 VE=02
0208 EEA1 SKIP;VE NE KEY
020A 1212 GO 0212
020C 1200 GO 0200
020E 6800 V8=00
0210 1214 GO 0214
0212 6801 V8=01
0214 6501 V5=01
0216 66E8 V6=E8
0218 A67F I=067F
021A 0634 MLS@0634
021C FC01
021E 4C00 SKIP;VC NE 00
0220 1234 GO 0234
0222 0634 MLS@0634
0224 F001
0226 0603 MLS@0603
0228 122A GO 022A
022A 05E3 MLS@05E3
022C 70FF V0+FF
022E 3000 SKIP;V0 EQ 00
0230 1226 GO 0226
0232 121A GO 021A
0234 A68A I=068A
0236 0642 MLS@0642

```

```

0238 A69A I=069A
023A 0628 MLS@0628
023C 0501
023E 4800 SKIP;V8 NE 00
0240 1246 GO 0246
0242 0628 MLS@0628
0244 0501
0246 A690 I=0690
0248 063A MLS@063A
024A F801
024C C107 V1=RND
024E 7103 V1+03
0250 063A MLS@063A
0252 F101
0254 063A MLS@063A
0256 F101
0258 4800 SKIP;V8 NE 00
025A 1262 GO 0262
025C 6A01 VA=01
025E 252E D0 052E
0260 2550 D0 0550
0262 6A00 VA=00
0264 252E D0 052E
0266 2550 D0 0550
0268 6116 V1=16
026A 600A V0=0A
026C A67C I=067C

```

```

026E D013 SHOW 3MI@V0V1
0270 6019 V0=19
0272 D013 SHOW 3MI@V0V1
0274 6024 V0=24
0276 D013 SHOW 3MI@V0V1
0278 6033 V0=33
027A D013 SHOW 3MI@V0V1
027C 6104 V1=04
027E 247C D0 047C
0280 71FF V1+FF
0282 3100 SKIP;V1 EQ 00
0284 127E GO 027E
0286 2578 D0 0578
0288 2592 D0 0592
028A 6A00 VA=00
028C 6400 V4=00
028E 6E01 VE=01
0290 EEA1 SKIP;VE NE KEY
0292 12A8 GO 02A8
0294 24B4 D0 04B4
0296 FF07 VF=TIME
0298 3F00 SKIP;VF EQ 00
029A 128E GO 028E
029C 2550 D0 0550
029E 6F04 VF=04
02A0 FF15 TIME=VF
02A2 6101 V1=01
02A4 8413
02A6 128E GO 028E
02A8 4400 SKIP;V4 NE 00
02AA 2550 D0 0550
02AC A69A I=069A
02AE FA1E I=I+VA
02B0 F065 V0;V0=MI
02B2 70FF V0+FF
02B4 0640 MLS@0640
02B6 F055 MI=V0;V0
02B8 2550 D0 0550
02BA A693 I=0693
02BC 0628 MLS@0628
02BE 0301
02C0 6502 V5=02
02C2 663F V6=3F
02C4 0603 MLS@0603
02C6 12C8 GO 02C8
02C8 6404 V4=04
02CA C707 V7=RND
02CC 2572 D0 0572
02CE A693 I=0693
02D0 F065 V0;V0=MI
02D2 F015 TIME=V0
02D4 24B4 D0 04B4
02D6 FF07 VF=TIME
02D8 3F00 SKIP;VF EQ 00
02DA 1206 GO 02D6

02DC 0603 MLS@0603
02DE 12EA GO 02EA
02E0 12DC GO 02DC
02E2 A640 I=0640
02E4 F41E I=I+V4
02E6 F065 V0;V0=MI
02E8 8400 V4=V0
02EA 8C40 VC=V4
02EC 05E3 MLS@05E3
02EE 61EF V1=EF
02F0 8165 V1=V1-V6
02F2 4F00 SKIP;VF NE 00
02F4 1334 GO 0334
02F6 0608 MLS@0608
02F8 13AA GO 03AA
02FA A693 I=0693
02FC 0634 MLS@0634
02FE F100
0300 3103 SKIP;V1 EQ 03
0302 130A GO 030A
0304 6E00 VE=00
0306 EEA1 SKIP;VE NE KEY
0308 135A GO 035A
030A 78FF V8+FF
030C 3800 SKIP;V8 EQ 00
030E 132E GO 032E
0310 A69D I=069D
0312 0634 MLS@0634
0314 FE00
0316 4E00 SKIP;VE NE 00
0318 1326 GO 0326
031A 7EFF VE+FF
031C 063A MLS@063A
031E FE00
0320 8870 V8=V7
0322 6C08 VC=08
0324 12EC GO 02EC
0326 A693 I=0693
0328 0628 MLS@0628
032A 0301
032C 1320 GO 0320
032E 0603 MLS@0603
0330 132E GO 032E
0332 12CE GO 02CE
0334 6F2D VF=2D
0336 FF18 TONE=VF
0338 FF15 TIME=VF
033A 24B4 D0 04B4
033C FF07 VF=TIME
033E 3F00 SKIP;VF EQ 00
0340 133A GO 033A
0342 A690 I=0690
0344 0634 MLS@0634
0346 F800
0348 8A83

```

```
034A A69A I=069A
034C FA1E I=I+VA
034E F065 V0:V0=MI
0350 4000 SKIP#V0 NE 00
0352 1358 GO 0358
0354 128C GO 028C
0356 2486 DO 0486
0358 1358 GO 0358
035A A691 I=0691
035C FA1E I=I+VA
035E F065 V0:V0=MI
0360 4000 SKIP#V0 NE 00
0362 137C GO 037C
0364 0640 MLS#0640
0366 70FF V0+FF
0368 F055 MI=V0:V0
036A A69D I=069D
036C 0628 MLS#0628
036E 1800
0370 A693 I=0693
0372 0628 MLS#0628
0374 0101
0376 2568 DO 0568
0378 2570 DO 0570
037A 12EA GO 02EA
037C 246E DO 046E
037E 24A4 DO 04A4
0380 A690 I=0690
0382 0634 MLS#0634
0384 F800
0386 A69A I=069A
0388 FA1E I=I+VA
038A 6000 V0=00
038C F055 MI=V0:V0
038E 8A83
0390 78FF V8+FF
0392 A690 I=0690
0394 063A MLS#063A
0396 F800
0398 3800 SKIP#V8 EQ 00
039A 1358 GO 0358
039C 6E01 VE=01
039E EE11 SKIP#VE NE KEY
03A0 13A4 GO 03A4
03A2 139C GO 039C
03A4 24A4 DO 04A4
03A6 246E DO 046E
03A8 1342 GO 0342
03AA 6D02 VD=02
03AC F018 TONE=VD
03AE 2570 DO 0570
03B0 A67A I=067A
03B2 8160 V1=V6
03B4 0634 MLS#0634
03B6 F201
03B8 8125 V1=V1-V2
03BA 4F00 SKIP#VF NE 00
03BC 141E GO 041E
03BE 8160 V1=V6
03C0 0634 MLS#0634
03C2 F201
03C4 8215 V2=V2-V1
03C6 4F00 SKIP#VF NE 00
03C8 141E GO 041E
03CA 6107 V1=07
03CC 8162 V1=V1&V6
03CE A65F I=065F
03D0 F11E I=I+V1
03D2 F065 V0:V0=MI
03D4 8100 V1=V0
03D6 4100 SKIP#V1 NE 00
03D8 141E GO 041E
03DA 2486 DO 0486
03DC 252E DO 052E
03DE 2484 DO 0484
03E0 A689 I=0689
03E2 F11E I=I+V1
03E4 F065 V0:V0=MI
03E6 8F00 VF=V0
03E8 A697 I=0697
03EA 4A01 SKIP#VA NE 01
03EC A69A I=069A
03EE 6903 V9=03
03F0 0640 MLS#0640
03F2 F065 V0:V0=MI
03F4 0640 MLS#0640
03F6 80F4 V0=V0+VF
03F8 6C0A VC=0A
03FA 80C5 V0=V0-VC
03FC 3F00 SKIP#VF EQ 00
03FE 1402 GO 0402
0400 700A V0+0A
0402 F055 MI=V0:V0
0404 0640 MLS#0640
0406 79FF V9+FF
0408 3900 SKIP#V9 EQ 00
040A 13F0 GO 03F0
040C 3F00 SKIP#VF EQ 00
040E 1356 GO 0356
0410 C201 V2=RND
0412 3200 SKIP#V2 EQ 00
0414 141A GO 041A
0416 247C DO 047C
0418 141C GO 041C
041A 2486 DO 0486
041C 252E DO 052E
041E 2484 DO 0484
0420 46E8 SKIP#V6 NE E8
0422 1466 GO 0466
0424 46EF SKIP#V6 NE EF
```

0426	1466	GO 0466	0494	7901	V9+01
0428	6100	V1=00	0496	7201	V2+01
042A	6C02	VC=02	0498	A689	I=0689
042C	05E3	MLS@05E3	049A	F11E	I=I+V1
042E	0608	MLS@0608	049C	F065	V0:V0=MI
0430	7101	V1+01	049E	F029	I=V0(LSDP)
0432	6C07	VC=07	04A0	D295	SHOW 5MI@V2V9
0434	05E3	MLS@05E3	04A2	00EE	RET
0436	0608	MLS@0608	04A4	A66E	I=066E
0438	7102	V1+02	04A6	6018	V0=18
043A	6C09	VC=09	04A8	6100	V1=00
043C	05E3	MLS@05E3	04AA	D014	SHOW 4MI@V0V1
043E	0608	MLS@0608	04AC	6020	V0=20
0440	7104	V1+04	04AE	A672	I=0672
0442	6C03	VC=03	04B0	D014	SHOW 4MI@V0V1
0444	05E3	MLS@05E3	04B2	00EE	RET
0446	0608	MLS@0608	04B4	A68E	I=068E
0448	7108	V1+08	04B6	F065	V0:V0=MI
044A	6C04	VC=04	04B8	0640	MLS@0640
044C	05E3	MLS@05E3	04BA	3000	SKIP;V0 EQ 00
044E	4105	SKIP;V1 NE 05	04BC	14D6	GO 04D6
0450	12E2	GO 02E2	04BE	6E04	VE=04
0452	4107	SKIP;V1 NE 07	04C0	EEA1	SKIP;VE NE KEY
0454	12E2	GO 02E2	04C2	14EE	GO 04EE
0456	410D	SKIP;V1 NE 0D	04C4	A69C	I=069C
0458	12E2	GO 02E2	04C6	F065	V0:V0=MI
045A	4101	SKIP;V1 NE 01	04C8	0640	MLS@0640
045C	12E2	GO 02E2	04CA	3000	SKIP;V0 EQ 00
045E	410A	SKIP;V1 NE 0A	04CC	14E2	GO 04E2
0460	146A	GO 046A	04CE	6E06	VE=06
0462	410B	SKIP;V1 NE 0B	04D0	EEA1	SKIP;VE NE KEY
0464	146A	GO 046A	04D2	14F8	GO 04F8
0466	2568	DO 0568	04D4	00EE	RET
0468	12EA	GO 02EA	04D6	70FF	V0+FF
046A	A655	I=0655	04D8	A68E	I=068E
046C	12E4	GO 02E4	04DA	F055	MI=V0:V0
046E	88A0	V8=VA	04DC	4004	SKIP;V0 NE 04
0470	6A01	VA=01	04DE	2578	DO 0578
0472	2550	DO 0550	04E0	14C4	GO 04C4
0474	6A00	VA=00	04E2	70FF	V0+FF
0476	2550	DO 0550	04E4	A69C	I=069C
0478	8A80	VA=V8	04E6	F055	MI=V0:V0
047A	00EE	RET	04E8	4004	SKIP;V0 NE 04
047C	A689	I=0689	04EA	2592	DO 0592
047E	C007	V0=RND	04EC	0CEE	RET
0480	7002	V0+02	04EE	2502	DO 0502
0482	F11E	I=I+V1	04F0	6009	V0=09
0484	F055	MI=V0:V0	04F2	6002	VD=02
0486	690B	V9=0B	04F4	FD18	TONE=VD
0488	A675	I=0675	04F6	14D8	GO 04D8
048A	F11E	I=I+V1	04F8	2514	DO 0514
048C	F065	V0:V0=MI	04FA	6009	V0=09
048E	8200	V2=V0	04FC	6002	VD=02
0490	A667	I=0667	04FE	FD18	TONE=VD
0492	D297	SHOW 7MI@V2V9	0500	14E4	GO 04E4

```
0502 A0E9 I=00E9
0504 0625 MLS@0625
0506 0628 MLS@0628
0508 0F01
050A 0628 MLS@0628
050C FF01
050E 0628 MLS@0628
0510 F806
0512 1524 GO 0524
0514 A0EC I=00EC
0516 0625 MLS@0625
0518 0628 MLS@0628
051A 1F01
051C 0628 MLS@0628
051E FF01
0520 0628 MLS@0628
0522 F008
0524 0628 MLS@0628
0526 0008
0528 0628 MLS@0628
052A 0000
052C 00EE RET
052E 6200 V2=00
0530 6B30 VB=30
0532 4A01 SKIP;VA NE 01
0534 6B00 VB=00
0536 6900 V9=00
0538 A69A I=069A
053A 4A01 SKIP;VA NE 01
053C A697 I=0697
053E F91E I=I+V9
0540 F065 V0:V0=MI
0542 F029 I=V0(LSDP)
0544 DB25 SHOW 5MI@VBV2
0546 7B06 VB+06
0548 7901 V9+01
054A 3903 SKIP;V9 EQ 03
054C 1538 GO 0538
054E 00EE RET
0550 A69A I=069A
0552 FA1E I=I+VA
0554 F065 V0:V0=MI
0556 4000 SKIP;V0 NE 00
0558 156E GO 056E
055A F029 I=V0(LSDP)
055C 6200 V2=00
055E 6126 V1=26
0560 4A01 SKIP;VA NE 01
0562 6116 V1=16
0564 D125 SHOW 5MI@V1V2
0566 00EE RET
0568 610A V1=0A
056A 8145 V1=V1-V4
056C 8410 V4=V1
056E 00EE RET
```

```
0570 C703 V7=RND
0572 7703 V7+03
0574 8870 V8=V7
0576 00EE RET
0578 A0E9 I=00E9
057A 0625 MLS@0625
057C 0628 MLS@0628
057E 0801
0580 0628 MLS@0628
0582 0001
0584 0628 MLS@0628
0586 0006
0588 0628 MLS@0628
058A 0808
058C 0628 MLS@0628
058E 0800
0590 00EE RET
0592 A0EC I=00EC
0594 0625 MLS@0625
0596 0628 MLS@0628
0598 0001
059A 0628 MLS@0628
059C 0001
059E 0628 MLS@0628
05A0 1008
05A2 0628 MLS@0628
05A4 1008
05A6 0628 MLS@0628
05A8 1000
05AA 00EE RET
05AC 01D6
05AE D6C6
05B0 D7C6
05B2 D6C6
05B4 CBD7
05B6 D6D6
05B8 D6CE
05BA D6C1
05BC D7C1
05BE D6C1
05C0 CBF8
05C2 08F4
05C4 56D3
05C6 F808
05C8 F556
05CA D38E
05CC F63B
05CE D5F8
05D0 01F4
05D2 56F8
05D4 80AE
05D6 D38E
05D8 FE3B
05DA D5F8
05DC 01F5
```

05DE 56F8	0634 45A6
05E0 0130	0636 0A56
05E2 D5F8	0638 302A
05E4 FCA7	063A 45A6
05E6 96B7	063C 065A
05E8 E7F8	063E 302A
05EA 05BD	0640 2AD4
05EC F8AD	0642 F814
05EE F4F4	0644 AFF8
05F0 ADF8	0646 005A
05F2 F5A6	0648 1A2F
05F4 E672	064A 8F3A
05F6 AE93	064C 45D4
05F8 BC4D	064E 0309
05FA ACDC	0650 0103
05FC 4DAC	0652 0001
05FE DC8E	0654 0902
0600 2656	0656 0708
0602 D4F8	0658 0901
0604 008C	065A 0003
0606 300B	065C 0102
0608 F801	065E 0300
060A BCF8	0660 0102
060C F5A6	0662 0203
060E E672	0664 0304
0610 AE9B	0666 00FC
0612 BFF0	0668 FCFC
0614 AFEF	066A FCFC
0616 8EF3	066C FCFC
0618 BE8E	066E 7222
061A F23A	0670 2222
061C 1F15	0672 4742
061E 159C	0674 4272
0620 3A24	0676 0815
0622 9E5F	0678 2532
0624 D49B	067A 598E
0626 BAD4	067C E0A0
0628 455A	067E E004
062A E58A	0680 0702
062C F4AA	0682 1706
062E 159A	0684 3F08
0630 7C00	0686 1704
0632 BAD4	0688 0800

2. VIP Message Center

The VIP MESSAGE CENTER program permits you to record in the computer memory and display letters, numbers, and special characters on the TV. The characters saved in the computer memory are recalled for continuous repetitive display of a message on the TV screen. You can choose two types of display formats. The **typewriter format** lets you fill the entire screen; the **ticker tape format** shows a line of characters in motion across the screen. This latter format is useful for words longer than ten characters.

The typewriter display is arranged into five lines of ten characters per line. The ticker tape display shows a line of ten characters. Up to 256 different characters and display commands can be saved in the computer memory. This corresponds to about three completely filled TV screens. There are 56 characters you can select: 0-9, A-Z, space, comma, box, period, colon, ellipsis, exclamation point, question mark, hyphen, dollar sign, cent sign, percent sign, single quote, double quote, plus sign, minus sign, times sign, division sign, slash, and equal sign.

The keyboard controls the selection of a character and starting or stopping the message display. The keyboard also provides the following display commands: the time to delay before displaying more parts of a message, clearing the screen, spacing between characters, and beginning a new line.

Should you make a mistake entering a character, you can correct it. You go through the message stopping where you made your error. You then overwrite the message with the intended character(s).

How To Use VIP Message Center

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Select the type of display:

Key 1 selects the typewriter format and saves the message characters in the computer memory.

Key 2 selects the ticker tape format and saves the message characters in the computer memory.

4. A flashing character indicates the display position where a character will go when selected. **The flashing character will not appear in the message unless it is saved.**

5. Key 1 selects the next character in the character sequence (see Instruction 11) to the left of the flashing character.

Key 3 selects the next character in the character sequence to the right of the flashing character. Holding down either 1 or 3 changes the character continuously.

Key 2 saves the flashing character in memory.

Key 6 stores a time delay corresponding to how long you hold this key down. The time may be as brief as a quarter of a second.

Key 7 clears the screen and stores a "clear screen" command.

Key 8 stores a space character and positions for the next character.

Key 9 starts a new line (typewriter format only) and stores this command.

Key 0 starts the message display.

Key 4 is used to step through the message to allow editing.

Key 5 stops the display at a character.

6. When you reach the **end of the line (10 character) in the typewriter format** no character will flash. You must press key 9 to start a new line.

7. You can select the space character using keys 1 or 3. See character sequence in Instruction 11.

8. The typewriter format rolls the top line off the screen. These characters are saved.

9. Key 2 is useful for skipping over characters when you are correcting a message. Care must be exercised so that you do not overwrite a stored command (such as a new line) unintentionally.

10. You can change the time for the ticker tape movement by altering location 04B7. Increase this value to increase the delay (units of a 60th of a second).

11. The character sequence is:

□ 0 1 2 3 4 5 6 7 8 9 A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z . , ; : ... ! - \$ % ' ? "

+ - × ÷ / =

↑
space

```

0200 1300 GO 0300
0202 50BF
0204 717C
0206 466F
0208 734B
020A 7577
020C 3D51
020E 6355
0210 6780
0212 5994
0214 AC40
0216 A183
0218 8F8B
021A 5D61
021C 3987
021E 6FA7
0220 9297
0222 9D99
0224 A56B
0226 B5B6
0228 DCF6
022A D18A
022C D9C4
022E CC41
0230 C8D6
0232 E1EA
0234 F2E5
0236 FBEE
0238 80F8
023A 8888
023C 98F8
023E 88F8
0240 8888
0242 1020
0244 4088
0246 9090
0248 F810
024A 10F8
024C 0808
024E 0808
0250 88F8
0252 4878
0254 48F8
0256 4848
0258 48F8
025A 8098
025C 88F8
025E 8888
0260 88F8
0262 88F8
0264 8080
0266 80F8
0268 80E0
026A 80F8
026C 1020

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```

026E 40F8
0270 80F8
0272 08F8
0274 80F8
0276 88F8
0278 88F8
027A 0808
027C F808
027E 3808
0280 F880
0282 E080
0284 8080
0286 80F8
0288 88F8
028A 9088
028C C8A8
028E 9888
0290 D8A8
0292 8888
0294 8888
0296 F888
0298 8888
029A 5020
029C 5088
029E 88A8
02A0 D888
02A2 90E0
02A4 9088
02A6 88F8
02A8 2020
02AA 2020
02AC F820
02AE 2020
02B0 F8F8
02B2 F8F8
02B4 F800
02B6 0000
02B8 0000
02BA 2020
02BC 2000
02BE 2060
02C0 2020
02C2 2070
02C4 F8A0
02C6 F828
02C8 F808
02CA 3800
02CC 20F8
02CE A0F8
02D0 2000
02D2 0000
02D4 00A8
02D6 5050
02D8 0000
02DA 0070

```

```
02DC 0000
02DE 0020
02E0 4020
02E2 20F8
02E4 2020
02E6 00F8
02E8 0020
02EA 0000
02EC F800
02EE 00F8
02F0 00F8
02F2 0050
02F4 2050
02F6 0020
02F8 0020
02FA 0008
02FC 1020
02FE 4080
0300 A5B5 I=05B5
0302 054D MLS0054D
0304 0000
0306 A5B6 I=05B6
0308 6000 V0=00
030A 054D MLS0054D
030C 3F01
030E 70FF V0+FF
0310 3000 SKIPV0 EQ 00
0312 130A GO 030A
0314 6E01 VE=01
0316 EEA1 SKIPVE NE KEY
0318 1322 GO 0322
031A 6E02 VE=02
031C EEA1 SKIPVE NE KEY
031E 1322 GO 0322
0320 1314 GO 0314
0322 88E0 V8=VE
0324 2534 DO 0534
0326 6636 V6=36
0328 6400 V4=00
032A 6500 V5=00
032C 4802 SKIPV8 NE 02
032E 6508 V5=08
0330 2512 DO 0512
0332 6F02 VF=02
0334 FF15 TIME=VF
0336 6E01 VE=01
0338 EEA1 SKIPVE NE KEY
033A 137C GO 037C
033C 6E02 VE=02
033E EEA1 SKIPVE NE KEY
0340 13A4 GO 03A4
0342 6E03 VE=03
0344 EEA1 SKIPVE NE KEY
0346 1392 GO 0392
0348 6E04 VE=04
034A EEA1 SKIPVE NE KEY
034C 1430 GO 0430
034E 6E06 VE=06
0350 EEA1 SKIPVE NE KEY
0352 140E GO 040E
0354 6E07 VE=07
0356 EEA1 SKIPVE NE KEY
0358 13DE GO 03DE
035A 6E08 VE=08
035C EEA1 SKIPVE NE KEY
035E 13E6 GO 03E6
0360 6E09 VE=09
0362 EEA1 SKIPVE NE KEY
0364 13F4 GO 03F4
0366 6E00 VE=00
0368 EEA1 SKIPVE NE KEY
036A 1430 GO 0430
036C FF07 VF=TIME
036E 3F00 SKIPVF EQ 00
0370 1336 GO 0336
0372 450A SKIPV5 NE 0A
0374 1332 GO 0332
0376 252C DO 052C
0378 252C DO 052C
037A 1332 GO 0332
037C 6D02 VD=02
037E FD18 TONE=VD
0380 450A SKIPV5 NE 0A
0382 1332 GO 0332
0384 252C DO 052C
0386 4600 SKIPV6 NE 00
0388 6637 V6=37
038A 76FF V6+FF
038C 2512 DO 0512
038E 24EE DO 04EE
0390 1332 GO 0332
0392 6D02 VD=02
0394 FD18 TONE=VD
0396 450A SKIPV5 NE 0A
0398 1332 GO 0332
039A 252C DO 052C
039C 4636 SKIPV6 NE 36
039E 66FF V6=FF
03A0 7601 V6+01
03A2 138C GO 038C
03A4 2534 DO 0534
03A6 450A SKIPV5 NE 0A
03A8 1332 GO 0332
03AA 24C6 DO 04C6
03AC 8360 V3=V6
03AE A5B6 I=05B6
03B0 F41E I=I+V4
03B2 055F MLS0055F
03B4 F300
03B6 7401 V4+01
```

```

03B8 4400 SKIP;V4 NE 00
03BA 1490 GO 0490
03BC A5B6 I=05B6
03BE F41E I=I+V4
03C0 0559 MLS00559
03C2 F100
03C4 413F SKIP;V1 NE 3F
03C6 8160 V1=V6
03C8 62C0 V2=C0
03CA 8212 V2=V2&V1
03CC 4200 SKIP;V2 NE 00
03CE 13D2 GO 03D2
03D0 8160 V1=V6
03D2 8610 V6=V1
03D4 450A SKIP;V5 NE 0A
03D6 13DC GO 03DC
03D8 252C DO 052C
03DA 2512 DO 0512
03DC 1332 GO 0332
03DE 00E0 ERASE
03E0 2534 DO 0534
03E2 634F V3=4F
03E4 1404 GO 0404
03E6 2534 DO 0534
03E8 450A SKIP;V5 NE 0A
03EA 1332 GO 0332
03EC 252C DO 052C
03EE 6324 V3=24
03F0 24C6 DO 04C6
03F2 13AE GO 03AE
03F4 4802 SKIP;V8 NE 02
03F6 1332 GO 0332
03F8 2534 DO 0534
03FA 450A SKIP;V5 NE 0A
03FC 1400 GO 0400
03FE 252C DO 052C
0400 24FA DO 04FA
0402 634E V3=4E
0404 4802 SKIP;V8 NE 02
0406 140A GO 040A
0408 6500 V5=00
040A 2512 DO 0512
040C 13AE GO 03AE
040E 6DC2 VD=62
0410 FD18 TONE=VD
0412 6101 V1=01
0414 6F0F VF=0F
0416 FF15 TIME=VF
0418 EE9E SKIP;VE EQ KEY
041A 142A GO 042A
041C FF07 VF=TIME
041E 3F00 SKIP;VF EQ 00
0420 1418 GO 0418
0422 7101 V1+01
0424 413C SKIP;V1 NE 3C
0426 142A GO 042A
0428 1414 GO 0414
042A 6380 V3=80
042C 8311 V3=V3/V1
042E 13AE GO 03AE
0430 2534 DO 0534
0432 A5B6 I=05B6
0434 F41E I=I+V4
0436 0559 MLS00559
0438 F100
043A 9610 SKIP;V6 NE V1
043C 1488 GO 0488
043E 450A SKIP;V5 NE 0A
0440 145A GO 045A
0442 252C DO 052C
0444 4801 SKIP;V8 NE 01
0446 75FF V5=FF
0448 A5B5 I=05B5
044A 054D MLS0054D
044C 0100
044E 145A GO 045A
0450 6400 V4=00
0452 4802 SKIP;V8 NE 02
0454 145A GO 045A
0456 65FF V5=FF
0458 00E0 ERASE
045A A5B6 I=05B6
045C F41E I=I+V4
045E 0559 MLS00559
0460 F600
0462 464F SKIP;V6 NE 4F
0464 1494 GO 0494
0466 464E SKIP;V6 NE 4E
0468 149C GO 049C
046A 61C0 V1=C0
046C 8162 V1=V1&V6
046E 4180 SKIP;V1 NE 80
0470 14D8 GO 04D8
0472 463F SKIP;V6 NE 3F
0474 1450 GO 0450
0476 4802 SKIP;V8 NE 02
0478 14A2 GO 04A2
047A 7501 V5+01
047C 2512 DO 0512
047E 4E04 SKIP;VE NE 04
0480 14C2 GO 04C2
0482 6E05 VE=05
0484 EEA1 SKIP;VE NE KEY
0486 14C2 GO 04C2
0488 7401 V4+01
048A 4400 SKIP;V4 NE 00
048C 1450 GO 0450
048E 145A GO 045A
0490 252C DO 052C
0492 1450 GO 0450

```

```
0494 00E0 ERASE
0496 4802 SKIP#V8 NE 02
0498 1488 GO 0488
049A 149E GO 049E
049C 24FA DO 04FA
049E 65FF V5=FF
04A0 1488 GO 0488
04A2 A585 I=0585
04A4 0559 MLS@0559
04A6 F100
04A8 054D MLS@054D
04AA 0000
04AC A08F I=008F
04AE 054A MLS@054A
04B0 4100 SKIP#V1 NE 00
04B2 0567 MLS@0567
04B4 2512 DO 0512
04B6 6F10 VF=10
04B8 FF15 TIME=VF
04BA FF07 VF=TIME
04BC 3F00 SKIP#VF EQ 00
04BE 14BA GO 04BA
04C0 147E GO 047E
04C2 2534 DO 0534
04C4 1332 GO 0332
04C6 4802 SKIP#V8 NE 02
04C8 14CE GO 04CE
04CA 7501 V5+01
04CC 14D4 GO 04D4
04CE A08F I=008F
04D0 054A MLS@054A
04D2 0567 MLS@0567
04D4 2512 DO 0512
04D6 00EE RET
04D8 607F V0=7F
04DA 8062 V0=V0&V6
04DC 6F0F VF=0F
04DE FF15 TIME=VF
04E0 FF07 VF=TIME
04E2 3F00 SKIP#VF EQ 00
04E4 14E0 GO 04E0
04E6 70FF V0+FF
04E8 3000 SKIP#V0 EQ 00
04EA 14DC GO 04DC
04EC 1488 GO 0488
04EE 6F06 VF=06
04F0 FF15 TIME=VF
04F2 FF07 VF=TIME
04F4 3F00 SKIP#VF EQ 00
04F6 14F2 GO 04F2
04F8 00EE RET
04FA A030 I=0030
04FC 054A MLS@054A
04FE 053E MLS@053E
0500 A0C8 I=00C8

0502 054A MLS@054A
0504 6028 V0=28
0506 054D MLS@054D
0508 0001
050A 70FF V0+FF
050C 3000 SKIP#V0 EQ 00
050E 1506 GO 0506
0510 00EE RET
0512 450A SKIP#V5 NE 0A
0514 1532 GO 0532
0516 A59D I=059D
0518 F51E I=I+V5
051A F51E I=I+V5
051C 0559 MLS@0559
051E F901
0520 0559 MLS@0559
0522 FA00
0524 A202 I=0202
0526 F61E I=I+V6
0528 0559 MLS@0559
052A F700
052C A200 I=0200
052E F71E I=I+V7
0530 D9A5 SHOW 5MI@V9VA
0532 00EE RET
0534 6B02 VB=02
0536 FB18 TONE=VB
0538 EEA1 SKIP#VE NE KEY
053A 1538 GO 0538
053C 00EE RET
053E F800
0540 AF9A
0542 BF4A
0544 5F1F
0546 8A3A
0548 43D4
054A 9BBA
054C D445
054E 5AE5
0550 8AF4
0552 AA15
0554 9A7C
0556 00BA
0558 D445
055A A60A
055C 5630
055E 4F45
0560 A606
0562 5A30
0564 4F2A
0566 D4F8
0568 06AD
056A F8FF
056C A6E6
056E 8AAC
```

0570 9ABC
0572 8CAA
0574 9CBA
0576 F805
0578 AEF8
057A 07AF
057C F800
057E 560A
0580 FEF1
0582 5AF8
0584 007C
0586 0056
0588 2A2F
058A 8F3A
058C 7F0A
058E FEF1
0590 FA7F
0592 5A2A

0594 2E8E
0596 3A79
0598 2D8D
059A 3A72
059C D402
059E 1908
05A0 190E
05A2 1914
05A4 191A
05A6 1920
05A8 1926
05AA 192C
05AC 1932
05AE 1938
05B0 1938
05B2 1938
05B4 0D00

3. VIP Bingo

VIP BINGO automatically calls and verifies BINGO numbers. The computer selects numbers randomly and displays the last three numbers drawn. After a player calls "BINGO", the computer will check the player's numbers against a list stored in its memory. The computer adds the numbers checked to give the player a score for that round of play.

There are two modes for drawing numbers. Using the **manual** mode, the operator must press a key to obtain a new number. Using the **automatic** mode, the computer draws numbers every twelve seconds until halted by the operator. Using a third mode, **verify**, the operator enters numbers on the keyboard for the computer to check against the list of numbers called.

How To Play VIP Bingo

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.

3. Key "A" starts calling numbers in the **manual** mode. Press key "A" for every new number. New numbers appear at the bottom of the display and are rolled upward.

4. Key "B" starts calling the numbers in the **automatic** mode. New numbers appear every twelve seconds until all numbers are called. You can press key "A" to enter the **manual** mode, or key "C" to stop calling numbers.

5. Key "C" starts the **verify** mode. Enter two digits for each number making up a winning BINGO card. (Note: press 01 for B-1, 02 for B-2, 75 for 0-75, etc.) If the number was called, "OK" will show; if it was not called, "NO" will show. If all five numbers are OK, press key "F" to display the score for the numbers entered. The score will be displayed followed by "PT" (point total). You do not have to enter any number for "FREE". If one of the numbers verified was not called, you can resume calling numbers as in Step 3 or 4. You may also press key "C" to restart verify if you make a mistake entering a number.

```
0200 604F V0=4F
0202 A454 I=0454
0204 2386 D0 0386
0206 654B V5=4B
0208 6E9A VE=0A
020A EEA1 SKIP;VE NE KEY
020C 121C GO 021C
020E 6E0B VE=0B
0210 EEA1 SKIP;VE NE KEY
0212 121C GO 021C
0214 6E0C VE=0C
0216 EEA1 SKIP;VE NE KEY
0218 1286 GO 0286
021A 1208 GO 0208
021C 2392 D0 0392
021E 88E0 V8=VE
0220 237A D0 037A
0222 237A D0 037A
0224 4500 SKIP;V5 NE 00
0226 1208 GO 0208
0228 C77F V7=RND
022A 7701 V7=01
022C 624B V2=4B
022E 8275 V2=V2-V7
0230 3F00 SKIP;VF EQ 00
0232 1238 GO 0238
0234 77B5 V7+B5
0236 122C GO 022C
```

```
0238 A454 I=0454
023A F71E I=I+V7
023C F065 V0:V0=MI
023E 3000 SKIP;V0 EQ 00
0240 1224 GO 0224
0242 041A MLS041A
0244 6001 V0=01
0246 F055 MI=V0:V0
0248 75FF V5+FF
024A 239C D0 039C
024C 6D08 VD=08
024E FD18 TONE=VD
0250 6628 V6=28
0252 6D0F VD=0F
0254 FD15 TIME=VD
0256 6E0A VE=0A
0258 EEA1 SKIP;VE NE KEY
025A 121C GO 021C
025C 6E0B VE=0B
025E EEA1 SKIP;VE NE KEY
0260 121C GO 021C
0262 6E0C VE=0C
0264 EEA1 SKIP;VE NE KEY
0266 1286 GO 0286
0268 FD07 VD=TIME
026A 3D00 SKIP;VD EQ 00
026C 1256 GO 0256
```

```

026E 23C8 DO 03C8
0270 600A V0=0A
0272 70FF V0+FF
0274 3000 SKIP;V0 EQ 00
0276 1272 GO 0272
0278 23C8 DO 03C8
027A 76FF V6+FF
027C 3600 SKIP;V6 EQ 00
027E 1252 GO 0252
0280 4808 SKIP;V8 NE 0B
0282 1220 GO 0220
0284 1208 GO 0208
0286 2392 DO 0392
0288 00E0 ERASE
028A 6400 V4=00
028C A4A3 I=04A3
028E 6000 V0=00
0290 F033 MI=V0(3DD)
0292 6E0A VE=0A
0294 EEA1 SKIP;VE NE KEY
0296 121C GO 021C
0298 6E0B VE=0B
029A EEA1 SKIP;VE NE KEY
029C 121C GO 021C
029E 6E0C VE=0C
02A0 EEA1 SKIP;VE NE KEY
02A2 1286 GO 0286
02A4 6E0F VE=0F
02A6 EEA1 SKIP;VE NE KEY
02A8 132E GO 032E
02AA 2364 DO 0364
02AC 4EFF SKIP;VE NE FF
02AE 1292 GO 0292
02B0 87E0 V7=VE
02B2 A4A1 I=04A1
02B4 0414 MLS00414
02B6 FE01
02B8 817E
02BA 811E
02BC 811E
02BE 8174 V1=V1+V7
02C0 8714 V7=V7+V1
02C2 2364 DO 0364
02C4 4EFF SKIP;VE NE FF
02C6 12C2 GO 02C2
02C8 0414 MLS00414
02CA FE00
02CC 87E4 V7=V7+VE
02CE 614B V1=4B
02D0 8175 V1=V1-V7
02D2 4F00 SKIP;VF NE 00
02D4 1292 GO 0292
02D6 4700 SKIP;V7 NE 00
02D8 1292 GO 0292
02DA 237A DO 037A
02DC 239C DO 039C
02DE A454 I=0454
02E0 F71E I=I+V7
02E2 040E MLS0040E
02E4 F100
02E6 4100 SKIP;V1 NE 00
02E8 1324 GO 0324
02EA 6302 V3=02
02EC 6202 V2=02
02EE 6F00 VF=00
02F0 6003 V0=03
02F2 A4A0 I=04A0
02F4 F21E I=I+V2
02F6 040E MLS0040E
02F8 FC00
02FA A4A3 I=04A3
02FC F31E I=I+V3
02FE 040E MLS0040E
0300 F100
0302 81F4 V1=V1+VF
0304 81C4 V1=V1+VC
0306 6C0A VC=0A
0308 81C5 V1=V1-VC
030A 3F00 SKIP;VF EQ 00
030C 1310 GO 0310
030E 710A V1+0A
0310 0414 MLS00414
0312 F100
0314 72FF V2+FF
0316 73FF V3+FF
0318 70FF V0+FF
031A 3000 SKIP;V0 EQ 00
031C 12F2 GO 02F2
031E A41C I=041C
0320 2354 DO 0354
0322 1292 GO 0292
0324 A426 I=0426
0326 6401 V4=01
0328 1320 GO 0320
032A 6400 V4=00
032C 1208 GO 0208
032E 2392 DO 0392
0330 237A DO 037A
0332 A451 I=0451
0334 4400 SKIP;V4 NE 00
0336 A4A3 I=04A3
0338 F265 V0:V2=MI
033A 6910 V9=10
033C 6A19 VA=19
033E F029 I=V0(LSDP)
0340 D9A5 SHOW 5MI0V9VA
0342 7906 V9+06
0344 F129 I=V1(LSDP)
0346 D9A5 SHOW 5MI0V9VA
0348 7906 V9+06

```

```
034A F229 I=V2(LSDP)
034C D9A5 SHOW 5MI@V9VA
034E A430 I=0430
0350 2354 D0 0354
0352 1208 G0 0208
0354 6020 V0=20
0356 6119 V1=19
0358 D015 SHOW 5MI@V0V1
035A 7008 V0+08
035C 6B05 VB=05
035E FB1E I=I+VB
0360 D015 SHOW 5MI@V0V1
0362 00EE RET
0364 6E0A VE=0A
0366 7EFF VE+FF
0368 EEA1 SKIP;VE NE KEY
036A 1372 G0 0372
036C 3E00 SKIP;VE EQ 00
036E 1366 G0 0366
0370 1376 G0 0376
0372 2392 D0 0392
0374 00EE RET
0376 6EFF VE=FF
0378 00EE RET
037A A030 I=0030
037C 03FF MLS@03FF
037E 03F3 MLS@03F3
0380 A0CA I=00CA
0382 03FF MLS@03FF
0384 6024 V0=24
0386 0402 MLS@0402
0388 0001
038A 70FF V0+FF
038C 3000 SKIP;V0 EQ 00
038E 1386 G0 0386
0390 00EE RET
0392 6B02 VB=02
0394 FB18 TONE=VB
0396 EEA1 SKIP;VE NE KEY
0398 1396 G0 0396
039A 00EE RET
039C 613C V1=3C
039E 8175 V1=V1-V7
03A0 4F00 SKIP;VF NE 00
03A2 13E2 G0 03E2
03A4 612D V1=2D
03A6 8175 V1=V1-V7
03A8 4F00 SKIP;VF NE 00
03AA 13E6 G0 03E6
03AC 611E V1=1E
03AE 8175 V1=V1-V7
03B0 4F00 SKIP;VF NE 00
03B2 13EA G0 03EA
03B4 610F V1=0F
03B6 8175 V1=V1-V7
03B8 4F00 SKIP;VF NE 00
03BA 13EE G0 03EE
03BC A44C I=044C
03BE 6010 V0=10
03C0 6119 V1=19
03C2 D015 SHOW 5MI@V0V1
03CA A4A6 I=04A6
03CC F733 MI=V7(3DD)
03C8 A4A7 I=04A7
03CA 6019 V0=19
03CC 040E MLS@040E
03CE FC00
03D0 FC29 I=VC(LSDP)
03D2 D015 SHOW 5MI@V0V1
03DA A4A8 I=04A8
03DE 7006 V0+06
03D8 040E MLS@040E
03DA FC00
03DC FC29 I=VC(LSDP)
03DE D015 SHOW 5MI@V0V1
03E0 00EE RET
03E2 A448 I=0448
03E4 13BE G0 03BE
03E6 A444 I=0444
03E8 13BE G0 03BE
03EA A43F I=043F
03EC 13BE G0 03BE
03EE A43A I=043A
03F0 13BE G0 03BE
03F2 01F8
03F4 00AF
03F6 9ABF
03F8 4A5F
03FA 1F8A
03FC 3AF8
03FE D49B
0400 BAD4
0402 455A
0404 E58A
0406 F4AA
0408 159A
040A 7C00
040C BAD4
040E 45A6
0410 0A56
0412 3004
0414 45A6
0416 065A
0418 3004
041A 2AD4
041C 0302
041E 0202
0420 03C9
0422 4A4C
0424 4AC9
```

0426 0203
0428 0202
042A 024F
042C 49C9
042E 494F
0430 0302
0432 0302
0434 020F
0436 44C4
0438 0404
043A E040
043C 4640

043E E090
0440 D0B6
0442 9090
0444 F080
0446 B690
0448 F090
044A 9690
044C F050
044E 7650
0450 F000
0452 0000

4. VIP Blackjack

VIP BLACKJACK (also known as TWENTY-ONE) follows standard BLACKJACK rules. The VIP computer is the dealer. Both the dealer and player try to get cards that add up to "21". Each number card counts its face value; Ten, Jack, Queen, and King count 10; and Aces count as either one or eleven. A hand containing an Ace that counts as eleven and does not cause the total to exceed 21, is a "soft" hand. All other hands are "hard."

The VIP BLACKJACK dealer draws on soft 17, hard 16, or less. The dealer deals from two standard decks. Before dealing a new hand, if the number of cards in the combined decks is less than 22, the dealer automatically shuffles the cards. Pair splitting and insurance are not allowed. All winning hands pay 1 to 1, except blackjack, which pays 2 to 1.

The game ends either when the player has lost his stake, or when he breaks 999.

How To Play VIP Blackjack (One-Player)

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.
3. Your stakes will appear at the bottom right corner of your TV screen.
4. Whenever "CUT" appears on the screen, the dealer will shuffle the cards and wait for you to cut. Press key 0 to continue play.
5. Whenever "BET" appears on the screen, you enter your single-digit bet by pressing key 1 through

9, press key 0 to enter a bet of 10. Your bet will be displayed slightly above and to the left of your stakes.

6. After all bets are entered, two cards will be dealt to you and the dealer. The dealer's cards are on the top of the screen. One of the dealer's cards will be face down (hole card).

7. If the dealer has a natural (21) and you do not, you lose your bet. If you also have a natural, you get your bet back, and a "T" for tie appears in the bet position.

8. If the dealer does not have a natural and you do, you get three times your bet back. a "W" for win appears in the bet position.

9. When neither you nor the dealer has a natural, the word "HIT" will appear on your screen. You must either stand, hit, or double down.

It is your turn when your bet flashes.

—You Stand (indicating you have enough cards) by pressing key 0.

—You Hit (Indicating you want another card) by pressing key 1.

You can draw up to 5 additional cards for a maximum of 7 cards in your hand.

—You Double Down (indicating you want one more card and double your bet) by pressing key 2. Your bet will change on the screen.

You keep your turn after Hitting if the card count is 21 or less. You give up your turn after Standing, Doubling Down, or Busting (going over 21).

10. After you have finished your turn, the dealer turns up his hole (down) card. If you are still in the game, the dealer draws cards to his hand whenever it adds up to soft 17, hard 16, or less.

11. If the dealer goes over 21, you win unless you already busted. If you win, a "W" appears in the bet position and you receive twice your bet. If you tie the dealer (push), a "T" appears and you get your bet back. If your hand is less than the dealer's, you lose your bet.

```

0200 A68D I=068D
0202 061E MLS@061E
0204 A6B2 I=06B2
0206 24AA DO 04AA
0208 6A00 VA=00
020A 24E4 DO 04E4
020C A6BE I=06BE
020E 0610 MLS@0610
0210 F100
0212 4101 SKIP#V1 NE 01
0214 25F2 DO 05F2
0216 A6C4 I=06C4
0218 0610 MLS@0610
021A F701
021C 4700 SKIP#V7 NE 00
021E 1214 GO 0214
0220 6600 V6=00
0222 6115 V1=15
0224 A6BF I=06BF
0226 0610 MLS@0610
0228 F200
022A 8125 V1=V1-V2
022C 4F00 SKIP#VF NE 00
022E 1254 GO 0254
0230 0604 MLS@0604
0232 6801
0234 2588 DO 0588
0236 600D V0=0D
0238 A68D I=068D
023A 0604 MLS@0604
023C 0801
023E 70FF V0+FF
0240 3000 SKIP#V0 EQ 00
0242 123A GO 023A
0244 6E00 VE=00
0246 EEA1 SKIP#VE NE KEY
0248 124C GO 024C
024A 1244 GO 0244
024C 25E8 DO 05E8
024E A0BF I=00BF
0250 0601 MLS@0601
0252 05F9 MLS@05F9
0254 2576 DO 0576
0256 46FF SKIP#V6 NE FF
0258 129A GO 029A
025A 6E0A VE=0A
025C 7EFF VE+FF
025E EEA1 SKIP#VE NE KEY
0260 1268 GO 0268
0262 3E00 SKIP#VE EQ 00
0264 125C GO 025C
0266 1256 GO 0256
0268 6D02 VD=02
026A FD18 TONE=VD
026C 24BC DO 04BC
026E A6B2 I=06B2
0270 F41E I=I+V4
0272 0616 MLS@0616
0274 FE00
0276 74FF V4+FF
0278 6100 V1=00
027A 4E00 SKIP#VE NE 00
027C 6101 V1=01
027E 061C MLS@061C
0280 0616 MLS@0616
0282 F100
0284 2330 DO 0330
0286 3F00 SKIP#VF EQ 00
0288 1294 GO 0294
028A 24E4 DO 04E4
028C 24C0 DO 04C0
028E 24D6 DO 04D6
0290 76FF V6+FF
0292 1256 GO 0256
0294 2328 DO 0328
0296 24E4 DO 04E4
0298 1256 GO 0256
029A A0BF I=00BF
029C 0601 MLS@0601
029E 05F9 MLS@05F9
02A0 A69A I=069A
02A2 0604 MLS@0604
02A4 0008
02A6 0604 MLS@0604
02A8 0008
02AA 6602 V6=02
02AC 6A00 VA=00
02AE 2590 DO 0590
02B0 6A02 VA=02
02B2 2412 DO 0412
02B4 4601 SKIP#V6 NE 01
02B6 6100 V1=00
02B8 2592 DO 0592
02BA 76FF V6+FF
02BC 3600 SKIP#V6 EQ 00
02BE 12AC GO 02AC
02C0 6A00 VA=00
02C2 2466 DO 0466
02C4 8640 V6=V4
02C6 6A02 VA=02
02C8 2466 DO 0466
02CA 4415 SKIP#V4 NE 15
02CC 1310 GO 0310
02CE 6A00 VA=00
02D0 4615 SKIP#V6 NE 15
02D2 23F8 DO 03F8
02D4 4700 SKIP#V7 NE 00
02D6 120C GO 020C
02D8 258C DO 058C
02DA 4700 SKIP#V7 NE 00

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02DC 12E2 GO 02E2
02DE 6A00 VA=00
02E0 233A DO 033A
02E2 258C DO 058C
02E4 4700 SKIP$V7 NE 00
02E6 120C GO 020C
02E8 F007 VD=TIME
02EA 3000 SKIP$VD EQ 00
02EC 12E8 GO 02E8
02EE 2402 DO 0402
02F0 2466 DO 0466
02F2 8640 V6=V4
02F4 6210 V2=10
02F6 8265 V2=V2-V6
02F8 4F00 SKIP$VF NE 00
02FA 1300 GO 0300
02FC 2590 DO 0590
02FE 12F0 GO 02F0
0300 3411 SKIP$V4 EQ 11
0302 1308 GO 0308
0304 3300 SKIP$V3 EQ 00
0306 12FC GO 02FC
0308 4700 SKIP$V7 NE 00
030A 120C GO 020C
030C 23CA DO 03CA
030E 120C GO 020C
0310 2402 DO 0402
0312 4700 SKIP$V7 NE 00
0314 120C GO 020C
0316 6A00 VA=00
0318 4615 SKIP$V6 NE 15
031A 1320 GO 0320
031C 23A8 DO 03A8
031E 120C GO 020C
0320 23B2 DO 03B2
0322 120C GO 020C
0324 23B2 DO 03B2
0326 120C GO 020C
0328 24B8 DO 04B8
032A 24BC DO 04BC
032C 6500 V5=00
032E 1530 GO 0530
0330 24E4 DO 04E4
0332 24B8 DO 04B8
0334 24BC DO 04BC
0336 6501 V5=01
0338 132E GO 032E
033A 6600 V6=00
033C 6F0C VF=0C
033E FF15 TIME=VF
0340 6E01 VE=01
0342 EEA1 SKIP$VE NE KEY
0344 135E GO 035E
0346 6E02 VE=02
0348 EEA1 SKIP$VE NE KEY
034A 137E GO 037E
034C 6E00 VE=00
034E EEA1 SKIP$VE NE KEY
0350 137A GO 037A
0352 FF07 VF=TIME
0354 3F00 SKIP$VF EQ 00
0356 1340 GO 0340
0358 24D6 DO 04D6
035A 24D6 DO 04D6
035C 133C GO 033C
035E 25E8 DO 05E8
0360 6601 V6=01
0362 2590 DO 0590
0364 2466 DO 0466
0366 6115 V1=15
0368 8145 V1=V1-V4
036A 4F00 SKIP$VF NE 00
036C 13A8 GO 03A8
036E 4600 SKIP$V6 NE 00
0370 137C GO 037C
0372 245A DO 045A
0374 4207 SKIP$V2 NE 07
0376 137C GO 037C
0378 1352 GO 0352
037A 25E8 DO 05E8
037C 00EE RET
037E 25E8 DO 05E8
0380 3600 SKIP$V6 EQ 00
0382 1352 GO 0352
0384 2330 DO 0330
0386 3F00 SKIP$VF EQ 00
0388 13A2 GO 03A2
038A 24E4 DO 04E4
038C 24C0 DO 04C0
038E 24BC DO 04BC
0390 8340 V3=V4
0392 232C DO 032C
0394 24D6 DO 04D6
0396 6F1E VF=1E
0398 FF15 TIME=VF
039A FF07 VF=TIME
039C 3F00 SKIP$VF EQ 00
039E 139A GO 039A
03A0 1362 GO 0362
03A2 2328 DO 0328
03A4 24E4 DO 04E4
03A6 1352 GO 0352
03A8 24C0 DO 04C0
03AA 6D2D VD=2D
03AC FD18 TONE=VD
03AE FD15 TIME=VD
03B0 13EA GO 03EA
03B2 24C0 DO 04C0
03B4 A688 I=0688
03B6 23BE DO 03BE

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03B8 13E8 GO 03E8
03BA 24C0 DO 04C0
03BC A683 I=0683
03BE 6819 VE=19
03C0 6926 V9=26
03C2 09B5 SHOW 5MI@V9VB
03C4 24E4 DO 04E4
03C6 2328 DO 0328
03C8 00EE RET
03CA 6A00 VA=00
03CC 2466 DO 0466
03CE 6115 V1=15
03D0 8165 V1=V1-V6
03D2 4F00 SKIP;VF NE 00
03D4 13E0 GO 03E0
03D6 9460 SKIP;V4 NE V6
03D8 13B2 GO 03B2
03DA 8465 V4=V4-V6
03DC 4F00 SKIP;VF NE 00
03DE 13A8 GO 03A8
03E0 23BA DO 03BA
03E2 2328 DO 0328
03E4 3F00 SKIP;VF EQ 00
03E6 13F0 GO 03F0
03E8 24E4 DO 04E4
03EA 4A00 SKIP;VA NE 00
03EC 670C V7=00
03EE 00EE RET
03F0 A6BE I=06BE
03F2 0604 MLS@0604
03F4 0101
03F6 13EA GO 03EA
03F8 23BA DO 03BA
03FA 2328 DO 0328
03FC 3F00 SKIP;VF EQ 00
03FE 13F0 GO 03F0
0400 13E2 GO 03E2
0402 6A02 VA=02
0404 6100 V1=00
0406 6202 V2=02
0408 2592 DO 0592
040A A69C I=069C
040C 0610 MLS@0610
040E F100
0410 1592 GO 0592
0412 C13F V1=RND
0414 620C V2=0C
0416 8215 V2=V2-V1
0418 3F00 SKIP;VF EQ 00
041A 1420 GO 0420
041C 71F3 V1+F3
041E 1414 GO 0414
0420 A68D I=068D
0422 F11E I=I+V1
0424 0610 MLS@0610
0426 F200
0428 4200 SKIP;V2 NE 00
042A 1412 GO 0412
042C 72FF V2+FF
042E 0616 MLS@0616
0430 F200
0432 7101 V1+01
0434 245A DO 045A
0436 7201 V2+01
0438 0616 MLS@0616
043A F200
043C 8020 V0=V2
043E 0610 MLS@0610
0440 F301
0442 70FF V0+FF
0444 3000 SKIP;V0 EQ 00
0446 143E GO 043E
0448 0616 MLS@0616
044A F100
044C A6BF I=06BF
044E 0610 MLS@0610
0450 F300
0452 73FF V3+FF
0454 0616 MLS@0616
0456 F300
0458 00EE RET
045A A6A2 I=06A2
045C 4A02 SKIP;VA NE 02
045E A69A I=069A
0460 0610 MLS@0610
0462 F200
0464 00EE RET
0466 245A DO 045A
0468 0610 MLS@0610
046A F001
046C 6400 V4=00
046E 6C00 VC=00
0470 6300 V3=00
0472 4000 SKIP;V0 NE 00
0474 14A4 GO 04A4
0476 0610 MLS@0610
0478 F101
047A 4101 SKIP;V1 NE 01
047C 7C01 VC+01
047E 620A V2=0A
0480 8215 V2=V2-V1
0482 4F00 SKIP;VF NE 00
0484 14A6 GO 04A6
0486 8414 V4=V4+V1
0488 70FF V0+FF
048A 3000 SKIP;V0 EQ 00
048C 1476 GO 0476
048E 4C00 SKIP;VC NE 00
0490 14A4 GO 04A4
0492 740A V4+0A

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0494 7CFF VC+FF
0496 7301 V3+01
0498 6215 V2=15
049A 8245 V2=V2-V4
049C 3F00 SKIP$VF EQ 00
049E 148E GO 048E
04A0 74F6 V4+F6
04A2 73FF V3+FF
04A4 00EE RET
04A6 740A V4+0A
04A8 1488 GO 0488
04AA 0604 MLS$0604
04AC 0201
04AE 0604 MLS$0604
04B0 0001
04B2 0604 MLS$0604
04B4 0001
04B6 00EE RET
04B8 6302 V3=02
04BA 00EE RET
04BC 6408 V4=08
04BE 00EE RET
04C0 A0CC I=00CC
04C2 0601 MLS$0601
04C4 6005 V0=05
04C6 0604 MLS$0604
04C8 0001
04CA 0604 MLS$0604
04CC 0007
04CE 70FF V0+FF
04D0 3000 SKIP$V0 EQ 00
04D2 14C6 GO 04C6
04D4 00EE RET
04D6 24BC DO 04BC
04D8 8340 V3=V4
04DA 73FF V3+FF
04DC 6B19 VB=19
04DE 6923 V9=23
04E0 6C02 VC=02
04E2 151A GO 051A
04E4 24B8 DO 04B8
04E6 6003 V0=03
04E8 A6B2 I=06B2
04EA F31E I=I+V3
04EC 0610 MLS$0610
04EE FF00
04F0 3F00 SKIP$VF EQ 00
04F2 1506 GO 0506
04F4 73FF V3+FF
04F6 70FF V0+FF
04F8 3000 SKIP$V0 EQ 00
04FA 14E8 GO 04E8
04FC A6C4 I=06C4
04FE FA1E I=I+VA
0500 0616 MLS$0616
0502 FF00
0504 00EE RET
0506 6001 V0=01
0508 A6C4 I=06C4
050A FA1E I=I+VA
050C 0616 MLS$0616
050E FF00
0510 24B8 DO 04B8
0512 73FE V3+FE
0514 6B1B VB=1B
0516 6930 V9=30
0518 6C03 VC=03
051A A6B2 I=06B2
051C F31E I=I+V3
051E F065 V0:V0=MI
0520 F029 I=V0(LSDP)
0522 D9B5 SHOW 5MI$V9VB
0524 7301 V3+01
0526 7906 V9+06
0528 7CFF VC+FF
052A 3C00 SKIP$VC EQ 00
052C 151A GO 051A
052E 00EE RET
0530 6F00 VF=00
0532 6003 V0=03
0534 A6B2 I=06B2
0536 F41E I=I+V4
0538 0610 MLS$0610
053A F200
053C A6B2 I=06B2
053E F31E I=I+V3
0540 0610 MLS$0610
0542 F100
0544 3500 SKIP$V5 EQ 00
0546 1566 GO 0566
0548 81F4 V1=V1+VF
054A 8124 V1=V1+V2
054C 620A V2=0A
054E 8125 V1=V1-V2
0550 3F00 SKIP$VF EQ 00
0552 1556 GO 0556
0554 710A V1+0A
0556 0616 MLS$0616
0558 F100
055A 74FF V4+FF
055C 73FF V3+FF
055E 70FF V0+FF
0560 3000 SKIP$V0 EQ 00
0562 1534 GO 0534
0564 00EE RET
0566 81F5 V1=V1-VF
0568 8125 V1=V1-V2
056A 620A V2=0A
056C 8124 V1=V1+V2
056E 3F00 SKIP$VF EQ 00

```

0570	1556	GO 0556	05DE	FF15	TIME=VF
0572	71F6	V1+*F6	05E0	FF07	VF=TIME
0574	1556	GO 0556	05E2	3F00	SKIP\$VF EQ 00
0576	A64F	I=064F	05E4	15E0	GO 05E0
0578	6918	V9=18	05E6	00EE	RET
057A	6809	VB=09	05E8	6802	VB=02
057C	D985	SHOW 5MI@V9VB	05EA	FB18	TONE=VB
057E	7908	V9+08	05EC	EEA1	SKIP\$VE NE KEY
0580	6D05	VD=05	05EE	15EC	GO 05EC
0582	FD1E	I=I+VD	05F0	00EE	RET
0584	D985	SHOW 5MI@V9VB	05F2	6FFF	VF=FF
0586	00EE	RET	05F4	FF18	TONE=VF
0588	A663	I=0663	05F6	15F6	GO 05F6
058A	1578	GO 0578	05F8	01F8	
058C	A659	I=0659	05FA	005A	
058E	1578	GO 0578	05FC	2A8A	
0590	2412	DO 0412	05FE	3AF9	
0592	A63A	I=063A	0600	D49B	
0594	4A02	SKIP\$VA NE 02	0602	BAD4	
0596	A62A	I=062A	0604	455A	
0598	8020	V0=V2	0606	E58A	
059A	0610	MLS@0610	0608	F4AA	
059C	F401		060A	159A	
059E	0610	MLS@0610	060C	7C00	
05A0	F501		060E	BAD4	
05A2	70FF	V0+*FF	0610	45A6	
05A4	3000	SKIP\$V0 EQ 00	0612	0A56	
05A6	159A	GO 059A	0614	3006	
05A8	A648	I=0648	0616	45A6	
05AA	D457	SHOW 7MI@V4V5	0618	065A	
05AC	4106	SKIP\$V1 NE 00	061A	3006	
05AE	1508	GO 05D8	061C	2AD4	
05B0	4101	SKIP\$V1 NE 01	061E	F839	
05B2	15C0	GO 05C0	0620	AFF8	
05B4	6309	V3=09	0622	005A	
05B6	8315	V3=V3-V1	0624	1A2F	
05B8	4F00	SKIP\$VF NE 00	0626	8F3A	
05BA	15C0	GO 05C0	0628	21D4	
05BC	F129	I=V1(LSDP)	062A	1000	
05BE	15D2	GO 05D2	062C	1800	
05C0	A67A	I=067A	062E	2000	
05C2	410A	SKIP\$V1 NE 0A	0630	2800	
05C4	A66D	I=066D	0632	3000	
05C6	4108	SKIP\$V1 NE 0B	0634	3800	
05C8	A672	I=0672	0636	0800	
05CA	410C	SKIP\$V1 NE 0C	0638	0000	
05CC	A676	I=0676	063A	3911	
05CE	410D	SKIP\$V1 NE 0D	063C	3210	
05D0	A67E	I=067E	063E	2B11	
05D2	7401	V4+01	0640	2410	
05D4	7501	V5+01	0642	3909	
05D6	D455	SHOW 5MI@V4V5	0644	3208	
05D8	6D02	VD=02	0646	2809	
05DA	FD18	TONE=VD	0648	FEFE	
05DC	6F18	VF=18	064A	FEFE	

064C FEFE
064E FEFB
0650 4A7B
0652 4AFB
0654 DF04
0656 8404
0658 C493
065A 91F1
065C 9193
065E 9F04
0660 0404
0662 84F4
0664 8484
0666 84F7
0668 5F44
066A 4444
066C C4B8

066E A8A8
0670 A8B8
0672 1010
0674 1090
0676 F090
0678 90B0
067A F090
067C F090
067E 90A0
0680 C0A0
0682 9088
0684 88A8
0686 D888
0688 F820
068A 2020
068C 2003

5. VIP Slide

Slide is a two-person game. Each player tries to slide a "puck" over the high-scoring "spots" without hitting the back wall.

How To Play VIP Slide

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.
3. The puck moves up and down randomly. Press

```

0200 00E0 ERASE
0202 A360 I=0360
0204 6800 V8=00
0206 6900 V9=00
0208 6201 V2=01
020A 230E D0 030E
020C 62FF V2=FF
020E 230E D0 030E
0210 6A00 VA=00
0212 6800 VB=00
0214 6406 V4=06
0216 6C00 VC=00
0218 2328 D0 0328
021A 6C01 VC=01
021C 2328 D0 0328
021E A359 I=0359
0220 6D28 VD=28
0222 6E12 VE=12
0224 DDE3 SHOW 3MI@VDVE
0226 6D30 VD=30
0228 6E0E VE=0E
022A DDE3 SHOW 3MI@VDVE
022C 6E16 VE=16
022E DDE3 SHOW 3MI@VDVE
0230 6D38 VD=38
0232 6E0A VE=0A
0234 DDE3 SHOW 3MI@VDVE
0236 6E1A VE=1A
0238 DDE3 SHOW 3MI@VDVE
023A 6C00 VC=00
023C 6D03 VD=03
023E 2258 D0 0258
0240 6C01 VC=01
0242 6D3B VD=3B
0244 2258 D0 0258
0246 74FF V4+FF
0248 3400 SKIP;V4 EQ 00
024A 123A GO 023A
024C 620F V2=0F
024E F218 TONE=V2
0250 6118 V1=18
0252 F115 TIME=V1

```

"0"-key to stop the puck. The puck will move towards the spots after you release the key. The longer you hold the key down, the further the puck travels (maximum time approximately 2.5 seconds).

4. You get 2 points for hitting the first spot, 4 points for either of the next two spots, and 8 points for either of the last two. The highest score possible is 216 (two spots can be hit on one slide).
5. If you hit the back wall, though, you get zero points for that slide, even though you've hit a spot.
6. Each player gets 3 pucks per turn and 6 turns in a game.

```

0254 1366 GO 0366
0256 1256 GO 0256
0258 6204 V2=04
025A 234C D0 034C
025C A357 I=0357
025E 6E03 VE=03
0260 DDE2 SHOW 2MI@VDVE
0262 6503 V5=03
0264 6600 V6=00
0266 6E70 VE=70
0268 A35C I=035C
026A 6805 V8=05
026C 6909 V9=09
026E D894 SHOW 4MI@V8V9
0270 6D01 VD=01
0272 6111 V1=11
0274 C218 V2=RND
0276 7208 V2+08
0278 234C D0 034C
027A D894 SHOW 4MI@V8V9
027C 89D4 V9=V9+VD
027E D894 SHOW 4MI@V8V9
0280 71FF V1+FF
0282 E0A1 SKIP;V0 NE KEY
0284 1292 GO 0292
0286 3100 SKIP;V1 EQ 00
0288 1274 GO 0274
028A 4DFF SKIP;VD NE FF
028C 1270 GO 0270
028E 6DFF VD=FF
0290 1272 GO 0272
0292 6202 V2=02
0294 F218 TONE=V2
0296 6210 V2=10
0298 234C D0 034C
029A 3E00 SKIP;VE EQ 00
029C 7EFE VE+FE
029E E0A1 SKIP;V0 NE KEY
02A0 1296 GO 0296
02A2 6210 V2=10
02A4 234C D0 034C
02A6 E0A1 SKIP;V0 NE KEY

```

```
02A8 1296 GO 0296
02AA 6204 V2=04
02AC 234C DO 034C
02AE 83E0 V3=VE
02B0 83E4 V3=V3+VE
02B2 8230 V2=V3
02B4 234C DO 034C
02B6 7E02 VE=02
02B8 D894 SHOW 4MI@V8V9
02BA 7801 V8+01
02BC D894 SHOW 4MI@V8V9
02BE 4F01 SKIP$VF NE 01
02C0 12F8 GO 02F8
02C2 3E70 SKIP$VE EQ 70
02C4 12AE GO 02AE
02C6 6280 V2=80
02C8 237A DO 037A
02CA 2328 DO 0328
02CC 3C00 SKIP$VC EQ 00
02CE 12D4 GO 02D4
02D0 8A64 VA=VA+V6
02D2 12D6 GO 02D6
02D4 8B64 VB=VB+V6
02D6 2328 DO 0328
02D8 A35C I=035C
02DA D894 SHOW 4MI@V8V9
02DC 6220 V2=20
02DE F218 TONE=V2
02E0 75FF V5+FF
02E2 3500 SKIP$V5 EQ 00
02E4 1264 GO 0264
02E6 A357 I=0357
02E8 6E03 VE=03
02EA 6D03 VD=03
02EC 3C00 SKIP$VC EQ 00
02EE 6D3B VD=3B
02F0 DDE2 SHOW 2MI@VDVE
02F2 6204 V2=04
02F4 234C DO 034C
02F6 00EE RET
02F8 6202 V2=02
02FA F218 TONE=V2
02FC 483C SKIP$V8 NE 3C
02FE 12D8 GO 02D8
0300 4825 SKIP$V8 NE 25
0302 7602 V6+02
0304 482D SKIP$V8 NE 2D
0306 7604 V6+04
0308 4835 SKIP$V8 NE 35
030A 7608 V6+08
030C 1374 GO 0374
030E 613F V1=3F
0310 D891 SHOW 1MI@V8V9
0312 71FF V1+FF
0314 8824 V8=V8+V2
0316 3100 SKIP$V1 EQ 00
0318 1310 GO 0310
031A 611F V1=1F
031C D891 SHOW 1MI@V8V9
031E 71FF V1+FF
0320 8924 V9=V9+V2
0322 3100 SKIP$V1 EQ 00
0324 131C GO 031C
0326 00EE RET
0328 A361 I=0361
032A 6E02 VE=02
032C 6D08 VD=08
032E FA33 MI=VA(3DD)
0330 4C00 SKIP$VC NE 00
0332 1338 GO 0338
0334 6D28 VD=28
0336 FB33 MI=VB(3DD)
0338 F265 V0:V2=MI
033A F029 I=V0(LSDP)
033C DDE5 SHOW 5MI@VDVE
033E 7D06 VD+06
0340 F129 I=V1(LSDP)
0342 DDE5 SHOW 5MI@VDVE
0344 7D06 VD+06
0346 F229 I=V2(LSDP)
0348 DDE5 SHOW 5MI@VDVE
034A 00EE RET
034C 7202 V2+02
034E 72FF V2+FF
0350 3200 SKIP$V2 EQ 00
0352 134E GO 034E
0354 00EE RET
0356 01C0
0358 C0E0
035A A0E0
035C F0F0
035E F0F0
0360 8000
0362 0004
0364 00D4
0366 F107 V1=TIME
0368 3100 SKIP$V1 EQ 00
036A 1366 GO 0366
036C 72FF V2+FF
036E 3200 SKIP$V2 EQ 00
0370 124E GO 024E
0372 1372 GO 0372
0374 3F70 SKIP$VE EQ 70
0376 12AE GO 02AE
0378 12C6 GO 02C6
037A F215 TIME=V2
037C F207 V2=TIME
037E 3200 SKIP$V2 EQ 00
0380 137C GO 037C
0382 00EE RET
```

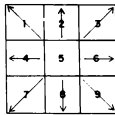
6. VIP Reversi

REVERSI is a game over 100 years old, which has become popular recently under the name OTHELLO. The game is played on an 8×8 square, using two kinds of markers. In VIP REVERSI one player has the open markers and the other player the solid markers. The score for either player at any time is the total number of his markers on the square.

How To Play VIP Reversi

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.
3. The 8×8 square will be formed and the starting marker configuration shown, having two of each kind of marker in the center four locations of the square. The starting score for each player is shown as 02 above a line of his markers.
4. Your VIP indicates the player's turn by blinking that player's score and also blinking a cursor-dot in the 8×8 square. A player moves the blinking cursor-dot in the 8×8 square by pressing the direction keys 1-4 and 6-9 as shown.

5. When the cursor-dot is properly located, the player presses key 5 to place his marker on the square. You will find that your VIP will not allow you to make a non-valid play. The only placements allowed are ones for which at least one of the other player's markers is surrounded between an existing marker of your own and your new marker being placed. All these markers must be in consecutive positions on the square and can be in any horizontal, vertical, or diagonal direction. Once a new marker has been placed, your VIP will change all such surrounded markers of the other player to your kind and change the scores.



6. Sometimes it may not be possible for a player to make a valid move. If this happens he must forfeit his move by pressing the "F" key! The game ends when neither player can play or when the 8×8 square is completely filled with markers. The goal is to end the game with the highest score. Do not be discouraged if during the game you seem to be losing because this is a game with dramatic reversals! Develop a winning strategem and become a champion!!

```

0200 6D02 VD=02
0202 6E02 VE=02
0204 6C00 VC=00
0206 A2D7 I=02D7
0208 6B00 VB=00
020A 6A11 VA=11
020C DAB3 SHOW 3MI@VAVB
020E 3A2D SKIP$VA EQ 2D
0210 121A GO 021A
0212 4B1C SKIP$VB NE 1C
0214 121E GO 021E
0216 7B04 VB+04
0218 120A GO 020A
021A 7A04 VA+04
021C 120C GO 020C
021E 6A1D VA=1D
0220 6B0C VB=0C
0222 DAB3 SHOW 3MI@VAVB
0224 7A04 VA+04
0226 7B04 VB+04
0228 DAB3 SHOW 3MI@VAVB
022A A2DA I=02DA
022C DAB3 SHOW 3MI@VAVB
022E 7AFC VA+FC
0230 DAB3 SHOW 3MI@VAVB
0232 7BFC VB+FC
0234 DAB3 SHOW 3MI@VAVB
0236 7A04 VA+04
0238 DAB3 SHOW 3MI@VAVB
023A 6002 V0=02
023C 22DE DO 02DE

```

```

023E 6034 V0=34
0240 22DE DO 02DE
0242 A2D7 I=02D7
0244 6034 V0=34
0246 22DE DO 02DE
0248 2394 DO 0394
024A 6901 V9=01
024C 230C DO 030C
024E 6800 V8=00
0250 237E DO 037E
0252 6900 V9=00
0254 4909 SKIP$V9 NE 09
0256 1272 GO 0272
0258 7901 V9+01
025A E99E SKIP$V9 EQ KEY
025C 1254 GO 0254
025E 4905 SKIP$V9 NE 05
0260 128C GO 028C
0262 3800 SKIP$V8 EQ 00
0264 239E DO 039E
0266 230C DO 030C
0268 3800 SKIP$V8 EQ 00
026A 239E DO 039E
026C 6102 V1=02
026E F118 TONE=V1
0270 1250 GO 0250
0272 690F V9=0F
0274 E99E SKIP$V9 EQ KEY
0276 1250 GO 0250
0278 3800 SKIP$V8 EQ 00
027A 22EC DO 02EC

```

```

027C 7C80 VC+80
027E 3800 SKIP#V8 EQ 00
0280 22EC D0 02EC
0282 6118 V1=18
0284 F118 TONE=V1
0286 E9A1 SKIP#V9 NE KEY
0288 1286 GO 0286
028A 1250 GO 0250
028C 3800 SKIP#V8 EQ 00
028E 237E D0 037E
0290 23A8 D0 03A8
0292 3100 SKIP#V1 EQ 00
0294 1250 GO 0250
0296 83A0 V3=VA
0298 84B0 V4=VB
029A 6900 V9=00
029C 23D0 D0 03D0
029E 4200 SKIP#V2 NE 00
02A0 1250 GO 0250
02A2 2394 D0 0394
02A4 A2DA I=02DA
02A6 D343 SHOW 3MI@V3V4
02A8 3C00 SKIP#VC EQ 00
02AA 12B0 GO 02B0
02AC A2D7 I=02D7
02AE D343 SHOW 3MI@V3V4
02B0 3C00 SKIP#VC EQ 00
02B2 12B8 GO 02B8
02B4 7D01 VD+01
02B6 12BA GO 02BA
02B8 7E01 VE+01
02BA 23FA D0 03FA
02BC 23D0 D0 03D0
02BE 3200 SKIP#V2 EQ 00
02C0 12BA GO 02BA
02C2 2394 D0 0394
02C4 81D0 V1=VD
02C6 81E4 V1=V1+VE
02C8 3140 SKIP#V1 EQ 40
02CA 1278 GO 0278
02CC 242E D0 042E
02CE 242E D0 042E
02D0 2388 D0 0388
02D2 242E D0 042E
02D4 12CC GO 02CC
02D6 0100
02D8 4000
02DA E0A0
02DC E0D4
02DE 6108 V1=0B
02E0 D013 SHOW 3MI@V0V1
02E2 7004 V0+04
02E4 D013 SHOW 3MI@V0V1
02E6 7004 V0+04
02E8 D013 SHOW 3MI@V0V1
02EA 00EE RET
02EC A440 I=0440
02EE 3C00 SKIP#VC EQ 00
02F0 1306 GO 0306
02F2 6502 V5=02
02F4 FD33 MI=VD(3DD)
02F6 6604 V6=04
02F8 F265 V0:V2=MI
02FA F129 I=V1(LSDP)
02FC D565 SHOW 5MI@V5V6
02FE 7507 V5+07
0300 F229 I=V2(LSDP)
0302 D565 SHOW 5MI@V5V6
0304 00EE RET
0306 6534 V5=34
0308 FE33 MI=VE(3DD)
030A 12F6 GO 02F6
030C 6700 V7=00
030E 4909 SKIP#V9 NE 09
0310 1372 GO 0372
0312 4908 SKIP#V9 NE 08
0314 135E GO 035E
0316 4907 SKIP#V9 NE 07
0318 1366 GO 0366
031A 4906 SKIP#V9 NE 06
031C 1356 GO 0356
031E 4904 SKIP#V9 NE 04
0320 134E GO 034E
0322 4903 SKIP#V9 NE 03
0324 1342 GO 0342
0326 4901 SKIP#V9 NE 01
0328 1336 GO 0336
032A 4B00 SKIP#VB NE 00
032C 1332 GO 0332
032E 7BFC VB+FC
0330 00EE RET
0332 67FF V7=FF
0334 00EE RET
0336 4B00 SKIP#VB NE 00
0338 1332 GO 0332
033A 4A11 SKIP#VA NE 11
033C 1332 GO 0332
033E 7AFC VA+FC
0340 132E GO 032E
0342 4B00 SKIP#VB NE 00
0344 1332 GO 0332
0346 4A2D SKIP#VA NE 2D
0348 1332 GO 0332
034A 7A04 VA+04
034C 132E GO 032E
034E 4A11 SKIP#VA NE 11
0350 1332 GO 0332
0352 7AFC VA+FC
0354 00EE RET
0356 4A2D SKIP#VA NE 2D
0358 1332 GO 0332
035A 7A04 VA+04
035C 00EE RET
035E 4B1C SKIP#VB NE 1C

```

```

0360 1332 GO 0332
0362 7B04 VB+04
0364 00EE RET
0366 4B1C SKIP#VB NE 1C
0368 1332 GO 0332
036A 4A11 SKIP#VA NE 11
036C 1332 GO 0332
036E 7AFC VA+FC
0370 1362 GO 0362
0372 4B1C SKIP#VB NE 1C
0374 1332 GO 0332
0376 4A2D SKIP#VA NE 2D
0378 1332 GO 0332
037A 7A04 VA+04
037C 1362 GO 0362
037E 2388 DO 0388
0380 22EC DO 02EC
0382 239E DO 039E
0384 7880 V8+80
0386 00EE RET
0388 6110 V1=10
038A F115 TIME=V1
038C F107 V1=TIME
038E 3100 SKIP#V1 EQ 00
0390 138C GO 038C
0392 00EE RET
0394 22EC DO 02EC
0396 7C80 VC+80
0398 22EC DO 02EC
039A 7C80 VC+80
039C 00EE RET
039E A2D7 I=02D7
03A0 DAB3 SHOW 3MI@VAVB
03A2 00EE RET
03A4 A2DA I=02DA
03A6 13A0 GO 03A0
03A8 23A4 DO 03A4
03AA 81F0 V1=VF
03AC 23A4 DO 03A4
03AE 4100 SKIP#V1 NE 00
03B0 13CC GO 03CC
03B2 239E DO 039E
03B4 81F0 V1=VF
03B6 239E DO 039E
03B8 3100 SKIP#V1 EQ 00
03BA 13C4 GO 03C4
03BC 3C00 SKIP#VC EQ 00
03BE 13C8 GO 03C8
03C0 6180 V1=80
03C2 00EE RET
03C4 3C00 SKIP#VC EQ 00
03C6 13C0 GO 03C0
03C8 61FF V1=FF
03CA 00EE RET
03CC 6100 V1=00
03CE 00EE RET

03D0 8A30 VA=V3
03D2 8B40 VB=V4
03D4 7901 V9+01
03D6 4905 SKIP#V9 NE 05
03D8 7901 V9+01
03DA 6200 V2=00
03DC 490A SKIP#V9 NE 0A
03DE 00EE RET
03E0 230C DO 030C
03E2 23A8 DO 03A8
03E4 4100 SKIP#V1 NE 00
03E6 13D0 GO 03D0
03E8 3180 SKIP#V1 EQ 80
03EA 13F2 GO 03F2
03EC 3200 SKIP#V2 EQ 00
03EE 00EE RET
03F0 13D0 GO 03D0
03F2 47FF SKIP#V7 NE FF
03F4 13D0 GO 03D0
03F6 7201 V2+01
03F8 13E0 GO 03E0
03FA 8190 V1=V9
03FC 690A V9=0A
03FE 8915 V9=V9-V1
0400 230C DO 030C
0402 81A0 V1=VA
0404 8135 V1=V1-V3
0406 3100 SKIP#V1 EQ 00
0408 141A GO 041A
040A 81B0 V1=VB
040C 8145 V1=V1-V4
040E 3100 SKIP#V1 EQ 00
0410 141A GO 041A
0412 8190 V1=V9
0414 690A V9=0A
0416 8915 V9=V9-V1
0418 00EE RET
041A 239E DO 039E
041C 3C00 SKIP#VC EQ 00
041E 1426 GO 0426
0420 7D01 VD+01
0422 7EFF VE+FF
0424 142A GO 042A
0426 7DFF VD+FF
0428 7E01 VE+01
042A 242E DO 042E
042C 1400 GO 0400
042E 6104 V1=04
0430 F118 TONE=V1
0432 2388 DO 0388
0434 00EE RET
0436 1424 GO 0424
0438 4A2D SKIP#VA NE 2D
043A 1424 GO 0424
043C 7A04 VA+04
043E 1420 GO 0420

```

7. VIP Bowling

Bowling is a great game for recreation and competition requiring skill and a little bit of luck. This program simulates bowling closely with regular scoring and the option of using three different spins on the ball.

How To Play VIP Bowling

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Up to 6 persons can compete. Make the choice by pressing KEY 1, 2, 3, 4, 5, or 6. The players will be referred to as A, B, C, D, E, and F.

4. It is possible to play up to 10 frames in one game. Make your choice of the number of frames by pressing KEY 1, 2, 3, 5, 6, 7, 8, 9, or 0 (for 10 frames).

5. It is possible to choose 3 ball speeds (KEY 1, 2, or 3). The speed option only affects the ball after it is released.

6. At the start of a player's turn, the video will display whose turn it is and whether he is working on a spare, strike, 2 strikes, or nothing.

Release the ball by pressing one of the following keys: KEY 1, 2, 3, 5, 7, 8, or 9.

—KEY 5 will cause a straight ball.

—KEY 1, 2, and 3 will cause the ball to spin up—KEY 1 before the first pin, KEY 2 after the first pin, and KEY 3 after the second pin.

—KEY 7, 8, and 9 will cause the ball to spin down—KEY 7 before the first pin, KEY 8 after the first pin, KEY 9 after the second pin.

7. After the player's turn ends, the video will display whose turn it was, the frame, and the score. The next player follows the instructions at 6 above.

8. After all players have had their turn in a frame, the video will display the total of each player and whether he is working on a spare, 1 strike, 2 strikes, or nothing. It will display the frame number and the total number of frames to go (unless the last frame was played).

After pressing any key, player A can start in the next frame. Continue with instruction 6 above.

9. If all frames in the game have been finished, press any key again. The players who are still working on a spare will receive 1 more ball, and those working on 1 or 2 strikes will receive 2 balls.

10. After all players have finished the game the final score will be displayed.

```
0200 6314 V3=14
0202 6400 V4=00
0204 255E D0 055E
0206 6005 V0=05
0208 2584 D0 05B4
020A 630C V3=0C
020C 25BC D0 05BC
020E 6906 V9=06
0210 89B5 V9=V9-VB
0212 3B00 SKIP$VB EQ 00
0214 4F00 SKIP$VF NE 00
0216 120C G0 020C
0218 FB29 I=VB(LSDP)
021A D345 SHOW 5MV3V4
021C 8DB0 VD=VB
021E 7D09 VD+09
0220 6314 V3=14
0222 640C V4=0C
0224 257A D0 057A
0226 6005 V0=05
0228 2584 D0 05B4
022A 630C V3=0C
022C 25BC D0 05BC
022E 6909 V9=09
0230 89B5 V9=V9-VB
0232 4F00 SKIP$VF NE 00
0234 122C G0 022C
0236 FB29 I=VB(LSDP)
```

```
0238 D345 SHOW 5MV3V4
023A 3B00 SKIP$VB EQ 00
023C 1246 G0 0246
023E 6B0A VB=0A
0240 6307 V3=07
0242 6001 V0=01
0244 2584 D0 05B4
0246 80B0 V0=VB
0248 A6A6 I=06A6
024A F055 MI=V0:V0
024C 6E00 VE=00
024E 6314 V3=14
0250 6418 V4=18
0252 6005 V0=05
0254 25B4 D0 05B4
0256 A64A I=064A
0258 25B6 D0 05B6
025A 600E V0=0E
025C 25B4 D0 05B4
025E 25B4 D0 05B4
0260 600D V0=0D
0262 25B4 D0 05B4
0264 630C V3=0C
0266 25BC D0 05BC
0268 6903 V9=03
026A 89B5 V9=V9-VB
026C 3B00 SKIP$VB EQ 00
```

```

026E 4F00 SKIP;VF NE 00
0270 1266 GO 0266
0272 FB29 I=VB(LSDP)
0274 D345 SHOW 5MV3V4 OUT 000 57E3
0276 6000 V0=00
0278 4B02 SKIP;VB NE 02
027A 6004 V0=04
027C 4B01 SKIP;VB NE 01
027E 6008 V0=08
0280 A4A9 I=04A9
0282 F055 MI=V0:V0
0284 25DE DO 05DE
0286 A694 I=0694
0288 6000 V0=00
028A 6100 V1=00
028C F055 MI=V0:V0
028E 7101 V1+01
0290 3112 SKIP;V1 EQ 12
0292 128C GO 028C
0294 6C0A VC=0A
0296 7E01 VE+01
0298 2608 DO 0608
029A 6A00 VA=00
029C 2376 DO 0376
029E 6300 V3=00
02A0 6410 V4=10
02A2 255E DO 055E
02A4 25C6 DO 05C6
02A6 80C0 V0=VC
02A8 25B4 DO 05B4
02AA 6302 V3=02
02AC 641B V4=1B
02AE 257A DO 057A
02B0 25C6 DO 05C6
02B2 80E0 V0=VE
02B4 2596 DO 0596
02B6 6330 V3=30
02B8 6400 V4=00
02BA A67C I=067C
02BC D349 SHOW 9MV3V4
02BE 7308 V3+08
02C0 D349 SHOW 9MV3V4
02C2 A696 I=0696
02C4 FC1E I=I+VC
02C6 F065 V0:V0=MI
02C8 6401 V4=01
02CA 3001 SKIP;V0 EQ 01
02CC 12EA GO 02EA
02CE 6339 V3=39
02D0 A66F I=066F
02D2 D347 SHOW 7MV3V4
02D4 A6A7 I=06A7
02D6 F065 V0:V0=MI
02D8 6332 V3=32
02DA 6402 V4=02
02DC 25B4 DO 05B4
02DE 12F4 GO 02F4
02E0 633A V3=3A
02E2 6402 V4=02
02E4 FB29 I=VB(LSDP)
02E6 D345 SHOW 5MV3V4
02E8 12D4 GO 02D4
02EA 4000 SKIP;V0 NE 00
02EC 12E0 GO 02E0
02EE 6331 V3=31
02F0 A675 I=0675
02F2 D347 SHOW 7MV3V4
02F4 25DE DO 05DE
02F6 9CD0 SKIP;VC NE VD
02F8 12FE GO 02FE
02FA 7C01 VC+01
02FC 1298 GO 0298
02FE 00E0 ERASE
0300 6300 V3=00
0302 6400 V4=00
0304 257A DO 057A
0306 25C6 DO 05C6
0308 80E0 V0=VE
030A 300E SKIP;V0 EQ 0E
030C 1312 GO 0312
030E 25B4 DO 05B4
0310 1314 GO 0314
0312 2596 DO 0596
0314 6C0A VC=0A
0316 6300 V3=00
0318 7409 V4+09
031A 80C0 V0=VC
031C 25B4 DO 05B4
031E 25C6 DO 05C6
0320 A68A I=068A
0322 FC1E I=I+VC
0324 F065 V0:V0=MI
0326 8500 V5=V0
0328 A690 I=0690
032A FC1E I=I+VC
032C F065 V0:V0=MI
032E 2598 DO 0598
0330 25F4 DO 05F4
0332 9CD0 SKIP;VC NE VD
0334 1344 GO 0344
0336 7C01 VC+01
0338 6924 V9=24
033A 8935 V9=V9-V3
033C 3F01 SKIP;VF EQ 01
033E 1316 GO 0316
0340 6325 V3=25
0342 131A GO 031A
0344 6337 V3=37
0346 6400 V4=00
0348 4E0E SKIP;VE NE 0E

```

```

034A 134A GO 034A
034C A6A6 I=06A6
034E F065 V0:V0=MI
0350 9E00 SKIP#VE NE V0
0352 135A GO 035A
0354 2596 DO 0596
0356 F90A V9=KEY
0358 1294 GO 0294
035A F90A V9=KEY
035C 6E0E VE=0E
035E 6C0A VC=0A
0360 2608 DO 0608
0362 4000 SKIP#V0 NE 00
0364 136E GO 036E
0366 6A00 VA=00
0368 4001 SKIP#V0 NE 01
036A 6A01 VA=01
036C 2376 DO 0376
036E 9C00 SKIP#VC NE VD
0370 12FE GO 02FE
0372 7C01 VC+01
0374 1360 GO 0360
0376 25DE DO 05DE
0378 00E0 ERASE
037A A684 I=0684
037C 6200 V2=00
037E 6100 V1=00
0380 D121 SHOW 1MV1V2
0382 7108 V1+08
0384 3140 SKIP#V1 EQ 40
0386 1380 GO 0380
0388 721F V2+1F
038A 421F SKIP#V2 NE 1F
038C 137E GO 037E
038E A685 I=0685
0390 6100 V1=00
0392 6201 V2=01
0394 D12F SHOW FMV1V2
0396 6210 V2=10
0398 D12F SHOW FMV1V2
039A A647 I=0647
039C 6127 V1=27
039E 620E V2=0E
03A0 D124 SHOW 4MV1V2
03A2 6120 V1=20
03A4 620A V2=0A
03A6 2590 DO 0590
03A8 D124 SHOW 4MV1V2
03AA 6133 V1=33
03AC 6206 V2=06
03AE 2590 DO 0590
03B0 2590 DO 0590
03B2 D124 SHOW 4MV1V2
03B4 6139 V1=39
03B6 6202 V2=02
03B8 2590 DO 0590
03BA 2590 DO 0590
03BC 2590 DO 0590
03BE D124 SHOW 4MV1V2
03C0 6800 VB=00
03C2 A642 I=0642
03C4 6101 V1=01
03C6 620E V2=0E
03C8 631A V3=1A
03CA 6401 V4=01
03CC D125 SHOW 5MV1V2
03CE 6822 V8=22
03D0 6902 V9=02
03D2 6501 V5=01
03D4 E5A1 SKIP#V5 NE KEY
03D6 1410 GO 0410
03D8 6502 V5=02
03DA E5A1 SKIP#V5 NE KEY
03DC 1414 GO 0414
03DE 6503 V5=03
03E0 E5A1 SKIP#V5 NE KEY
03E2 1418 GO 0418
03E4 6505 V5=05
03E6 E5A1 SKIP#V5 NE KEY
03E8 141C GO 041C
03EA 6507 V5=07
03EC E5A1 SKIP#V5 NE KEY
03EE 1422 GO 0422
03F0 6508 V5=08
03F2 E5A1 SKIP#V5 NE KEY
03F4 1420 GO 0420
03F6 6509 V5=09
03F8 E5A1 SKIP#V5 NE KEY
03FA 141E GO 041E
03FC D125 SHOW 5MV1V2
03FE 9230 SKIP#V2 NE V3
0400 1406 GO 0406
0402 8244 V2=V2+V4
0404 13CC GO 03CC
0406 3401 SKIP#V4 EQ 01
0408 13C8 GO 03C8
040A 6301 V3=01
040C 64FF V4=FF
040E 13CC GO 03CC
0410 79FC V9+FC
0412 1422 GO 0422
0414 79FC V9+FC
0416 1420 GO 0420
0418 79FC V9+FC
041A 141E GO 041E
041C 79FE V9+FE
041E 7809 V8+09
0420 7809 V8+09
0422 25EE DO 05EE
0424 248E DO 048E

```

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0426 A690 I=0690
0428 FC1E I=I+VC
042A F065 V0:V0=MI
042C 8800 V8=V0
042E A696 I=0696
0430 FC1E I=I+VC
0432 F065 V0:V0=MI
0434 8900 V9=V0
0436 3A00 SKIP$VA EQ 00
0438 1466 GC 0466
043A 4903 SKIP$V9 NE 03
043C 1458 GO 0458
043E 3900 SKIP$V9 EQ 00
0440 145C GO 045C
0442 2626 DO 0626
0444 4B0A SKIP$VB NE 0A
0446 1484 GO 0484
0448 2614 DO 0614
044A A6A7 I=06A7
044C 80B0 V0=VB
044E F055 MI=V0:V0
0450 7A01 VA+01
0452 3B0A SKIP$VB EQ 0A
0454 13C0 GO 03C0
0456 139A GO 039A
0458 2626 DO 0626
045A 79FF V9+FF
045C 2626 DO 0626
045E 79FF V9+FF
0460 3E0E SKIP$VE EQ 0E
0462 1442 GO 0442
0464 1448 GO 0448
0466 4901 SKIP$V9 NE 01
0468 147A GO 047A
046A 2626 DO 0626
046C A6A7 I=06A7
046E F065 V0:V0=MI
0470 80B4 V0=V0+VB
0472 400A SKIP$V0 NE 0A
0474 1486 GO 0486
0476 25DE DO 05DE
0478 1488 GO 0488
047A 2626 DO 0626
047C 79FF V9+FF
047E 3E0E SKIP$VE EQ 0E
0480 146A GO 046A
0482 1476 GO 0476
0484 7901 V9+01
0486 7901 V9+01
0488 2614 DO 0614
048A 00E0 ERASE
048C 00EE RET
048E 6300 V3=00
0490 6F00 VF=00
0492 3F00 SKIP$VF EQ 00

0494 14AE GO 04AE
0496 D125 SHOW 5MV1V2
0498 5180 SKIP$V1 EQ V8
049A 149E GO 049E
049C 8390 V3=V9
049E 7103 V1+03
04A0 8234 V2=V2+V3
04A2 413D SKIP$V1 NE 3D
04A4 00EE RET
04A6 D125 SHOW 5MV1V2
04A8 6000 V0=00
04AA 25E0 DO 05E0
04AC 1492 GO 0492
04AE D125 SHOW 5MV1V2
04B0 6627 V6=27
04B2 6702 V7=02
04B4 642A V4=2A
04B6 8415 V4=V4-V1
04B8 3F00 SKIP$VF EQ 00
04BA 14F8 GO 04F8
04BC 6430 V4=30
04BE 8415 V4=V4-V1
04C0 3F00 SKIP$VF EQ 00
04C2 14CE GO 04CE
04C4 6436 V4=36
04C6 8415 V4=V4-V1
04C8 3F00 SKIP$VF EQ 00
04CA 14F6 GO 04F6
04CC 760C V6+0C
04CE 7606 V6+06
04D0 4200 SKIP$V2 NE 00
04D2 1514 GO 0514
04D4 6405 V4=05
04D6 8425 V4=V4-V2
04D8 3F00 SKIP$VF EQ 00
04DA 1522 GO 0522
04DC 640D V4=0D
04DE 8425 V4=V4-V2
04E0 3F00 SKIP$VF EQ 00
04E2 151E GO 051E
04E4 6415 V4=15
04E6 8425 V4=V4-V2
04E8 3F00 SKIP$VF EQ 00
04EA 151A GO 051A
04EC 641A V4=1A
04EE 8425 V4=V4-V2
04F0 3F00 SKIP$VF EQ 00
04F2 1516 GO 0516
04F4 1514 GO 0514
04F6 760C V6+0C
04F8 4200 SKIP$V2 NE 00
04FA 1514 GO 0514
04FC 6409 V4=09
04FE 8425 V4=V4-V2
0500 3F00 SKIP$VF EQ 00

```

```
0502 1520 GO 0520
0504 6411 V4=11
0506 8425 V4=V4-V2
0508 3F00 SKIP$VF EQ 00
050A 151C GO 051C
050C 6419 V4=19
050E 8425 V4=V4-V2
0510 3F00 SKIP$VF EQ 00
0512 1518 GO 0518
0514 15EE GO 05EE
0516 7704 V7+04
0518 7704 V7+04
051A 7704 V7+04
051C 7704 V7+04
051E 7704 V7+04
0520 7704 V7+04
0522 A647 I=0647
0524 D674 SHOW 4MV6V7
0526 3F00 SKIP$VF EQ 00
0528 1530 GO 0530
052A D674 SHOW 4MV6V7
052C A642 I=0642
052E 1498 GO 0498
0530 7801 VB+01
0532 25EA DO 05EA
0534 C007 V0=RND
0536 8004 V0=V0+V0
0538 B53A GO 053A+V0
053A 1550 GO 0550
053C 154E GO 054E
053E 154A GO 054A
0540 1548 GO 0548
0542 1550 GO 0550
0544 154E GO 054E
0546 154A GO 054A
0548 7710 V7+10
054A 77F8 V7+F8
054C 1554 GO 0554
054E 7708 V7+08
0550 77FC V7+FC
0552 7606 V6+06
0554 641B V4=1B
0556 8475 V4=V4-V7
0558 3F00 SKIP$VF EQ 00
055A 1522 GO 0522
055C 152C GO 052C
055E A64A I=064A
0560 25B6 DO 05B6
0562 A64D I=064D
0564 D345 SHOW 5MV3V4
0566 7304 V3+04
0568 600A V0=0A
056A 25B4 DO 05B4
056C A652 I=0652
056E D345 SHOW 5MV3V4
0570 7304 V3+04
0572 600E V0=0E
0574 25B4 DO 05B4
0576 A65A I=065A
0578 15B6 GO 05B6
057A 600F V0=0F
057C 25P4 DO 05B4
057E A65A I=065A
0580 25B6 DO 05B6
0582 600A V0=0A
0584 25B4 DO 05B4
0586 A65F I=065F
0588 D345 SHOW 5MV3V4
058A 7306 V3+06
058C 600E V0=0E
058E 15B4 GO 05B4
0590 D124 SHOW 4MV1V2
0592 7208 V2+08
0594 00EE RET
0596 6500 V5=00
0598 A6A8 I=06A8
059A F033 MI=V0(3DD)
059C F265 V0:V2=MI
059E 8050 V0=V5
05A0 3000 SKIP$V0 EQ 00
05A2 15AA GO 05AA
05A4 3100 SKIP$V1 EQ 00
05A6 15AC GO 05AC
05A8 15B0 GO 05B0
05AA 25B4 DO 05B4
05AC 8010 V0=V1
05AE 25B4 DO 05B4
05B0 8020 V0=V2
05B2 15B4 GO 05B4
05B4 F029 I=V0(LSDP)
05B6 D345 SHOW 5MV3V4
05B8 7305 V3+05
05BA 00EE RET
05BC A664 I=0664
05BE D347 SHOW 7MV3V4
05C0 F80A VB=KEY
05C2 D347 SHOW 7MV3V4
05C4 00EE RET
05C6 A66B I=066B
05C8 D344 SHOW 4MV3V4
05CA 7302 V3+02
05CC 00EE RET
05CE A656 I=0656
05D0 D342 SHOW 2MV3V4
05D2 7303 V3+03
05D4 00EE RET
05D6 A658 I=0658
05D8 15D0 GO 05D0
05DA 6040 V0=40
05DC 15E0 GO 05E0
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05DE 60A0 V0=A0
05E0 F015 TIME=V0
05E2 F007 V0=TIME
05E4 3000 SKIP;V0 EQ 00
05E6 15E2 GO 05E2
05E8 00EE RET
05EA 6001 V0=01
05EC 15F0 GO 05F0
05EE 6008 V0=08
05F0 F018 TONE=V0 ✓
05F2 00EE RET
05F4 A696 I=0696
05F6 FC1E I=I+VC
05F8 F065 V0:V0=MI
05FA 4000 SKIP;V0 NE 00
05FC 00EE RET
05FE 4001 SKIP;V0 NE 01
0600 15CE GO 05CE
0602 4003 SKIP;V0 NE 03
0604 25D6 DO 05D6
0606 15D6 GO 05D6
0608 00E0 ERASE
060A FC29 I=VC(LSDP)
060C 631E V3=1E
060E 640D V4=0D
0610 25B6 DO 05B6
0612 15F4 GO 05F4
0614 A690 I=0690
0616 FC1E I=I+VC
0618 8080 V0=V8
061A F055 MI=V0:V0
061C A696 I=0696
061E FC1E I=I+VC
0620 8090 V0=V9
0622 F055 MI=V0:V0
0624 00EE RET
0626 88B4 V8=V8+VB
0628 6063 V0=63
062A 8085 V0=V0-V8
062C 3F00 SKIP;VF EQ 00
062E 00EE RET
0630 A68A I=068A
0632 FC1E I=I+VC
0634 F065 V0:V0=MI
0636 7001 V0+01
0638 A68A I=068A

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063A FC1E I=I+VC
063C F055 MI=V0:V0
063E 789C V8+9C
0640 00EE RET
0642 F8F8
0644 F8F8
0646 F8F0
0648 9090
064A F090
064C F080
064E 8080
0650 80E0
0652 A0A0
0654 E040
0656 4080
0658 C0C0
065A F090
065C F0A0
065E 90D8
0660 A888
0662 8888
0664 F090
0666 1070
0668 4000
066A 4000
066C 8000
066E 8000
0670 040C
0672 1C3C
0674 7CFC
0676 FCFC
0678 FCFC
067A FCFC
067C FF81
067E 8181
0680 8181
0682 8181
0684 FF80
0686 8080
0688 8080
068A 8080
068C 8080
068E 8080
0690 8080
0692 8080

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8. VIP Deflection

In the VIP DEFLECTION game you position mirrors anywhere on the display screen. The object of the game is to deflect a ball off the mirrors a maximum number of times before hitting the target.

The number of deflections times the target number gives you deflection points. These are added to your previous point total. If you fail to hit the target you get no points. The winner of the game is the player who accumulates 257 or more deflection points.

How To Play VIP Deflection

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.
3. After the scores appear a letter, the target with a number, and the ball. The letter signifies the player who will program the mirrors. This sequence will be repeated until there is a winner.
4. To program the mirrors select the proper mirror type by using Table 1 as a guide. Key 1 will place a horizontal mirror on the board. Key 2 selects a vertical mirror, Key 3 a slant-left mirror, and Key 4 a slant-right mirror.

Table 1 — Mirror Types

KEY SELECTION	MIRROR
1	—
2	
3	↙
4	↘

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5. After a mirror has been selected you may position the mirror by using keys 1 through 4 and 6 through 9 (see Table 2 for movement of a mirror). Once a mirror has been selected and positioned it may be fixed into position by pressing key 5.

Table 2 — Mirror Positioning and Ball Direction

Key Selection	Positioning and Direction
1	up and to the left
2	up
3	up and to the right
4	left
6	right
7	down and to the left
8	down
9	down and to the right

6. You may position up to 10 mirrors on the game board. After you have the maximum amount on the board you must press key 0 to progress to the fire mode. If you wish to progress to the fire mode with less than 10 mirrors programmed you may do so by pressing key 0. You fire the ball in the direction you want by using keys 1 through 4 and keys 6 through 9 (see Table 2).
7. After the ball has reached the target or leaves the game board, the player's score is computed and displayed and a new ball and target appear.

0200 6A00 VA=00	026E 1282 GO 0282
0202 6B00 VB=00	0270 A53C I=053C
0204 680A VB=0A	0272 4202 SKIP#V2 NE 02
0206 6C01 VC=01	0274 1282 GO 0282
0208 6D01 VD=01	0276 A540 I=0540
020A 6E0A VE=0A	0278 4203 SKIP#V2 NE 03
020C 6750 V7=50	027A 1282 GO 0282
020E 6900 V9=00	027C A544 I=0544
0210 2400 DO 0400	027E 3204 SKIP#V2 EQ 04
0212 6490 V4=90	0280 1260 GO 0260
0214 243E DO 043E	0282 601E V0=1E
0216 00E0 ERASE	0284 610E V1=0E
0218 C037 V0=RND	0286 D015 SHOW 5MV0V1
021A C117 V1=RND	0288 6405 V4=05
021C A54C I=054C	028A 243E DO 043E
021E F155 MI=V0:V1	028C D015 SHOW 5MV0V1
0220 A530 I=0530	028E 6309 V3=09
0222 D017 SHOW 7MV0V1	0290 E3A1 SKIP#V3 NE KEY
0224 1228 GO 0228	0292 129C GO 029C
0226 D011 SHOW 1MV0V1	0294 73FF V3+FF
0228 C03F V0=RND	0296 3300 SKIP#V3 EQ 00
022A C11F V1=RND	0298 1290 GO 0290
022C A54E I=054E	029A 1286 GO 0286
022E F155 MI=V0:V1	029C 4305 SKIP#V3 NE 05
0230 A548 I=0548	029E 12C0 GO 02C0
0232 D011 SHOW 1MV0V1	02A0 2448 DO 0448
0234 3F00 SKIP#VF EQ 00	02A2 40FF SKIP#V0 NE FF
0236 1226 GO 0226	02A4 6000 V0=00
0238 A54C I=054C	02A6 41FF SKIP#V1 NE FF
023A F165 V0:V1=MI	02A8 6100 V1=00
023C 7001 V0+01	02AA 643C V4=3C
023E 7101 V1+01	02AC 4202 SKIP#V2 NE 02
0240 84C0 V4=VC	02AE 6440 V4=40
0242 3E0A SKIP#VE EQ 0A	02B0 9040 SKIP#V0 NE V4
0244 84D0 V4=VD	02B2 70FF V0+FF
0246 F429 I=V4(LSDP)	02B4 641C V4=1C
0248 D015 SHOW 5MV0V1	02B6 4201 SKIP#V2 NE 01
024A 124E GO 024E	02B8 6420 V4=20
024C D015 SHOW 5MV0V1	02BA 9140 SKIP#V1 NE V4
024E C038 V0=RND	02BC 71FF V1+FF
0250 C118 V1=RND	02BE 1286 GO 0286
0252 FE29 I=VE(LSDP)	02C0 F30A V3=KEY
0254 D015 SHOW 5MV0V1	02C2 247A DO 047A
0256 3F00 SKIP#VF EQ 00	02C4 7905 V9+05
0258 124C GO 024C	02C6 1260 GO 0260
025A 64A0 V4=A0	02C8 6700 V7=00
025C 243E DO 043E	02CA F30A V3=KEY
025E D015 SHOW 5MV0V1	02CC 4300 SKIP#V3 NE 00
0260 F20A V2=KEY	02CE 12CA GO 02CA
0262 4200 SKIP#V2 NE 00	02D0 4305 SKIP#V3 NE 05
0264 12C8 GO 02C8	02D2 12CA GO 02CA
0266 4932 SKIP#V9 NE 32	02D4 6409 V4=09
0268 1260 GO 0260	02D6 8435 V4=V4-V3
026A A537 I=0537	02D8 3F01 SKIP#VF EQ 01
026C 4201 SKIP#V2 NE 01	02DA 12CA GO 02CA

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02DC A54E I=054E
02DE F165 V0:V1=MI
02E0 A548 I=0548
02E2 D011 SHOW 1MV0V1
02E4 2448 DO 0448
02E6 40FF SKIP#V0 NE FF
02E8 1358 GO 0358
02EA 41FF SKIP#V1 NE FF
02EC 1358 GO 0358
02EE 4040 SKIP#V0 NE 40
02F0 1358 GO 0358
02F2 4120 SKIP#V1 NE 20
02F4 1358 GO 0358
02F6 D011 SHOW 1MV0V1
02F8 4F01 SKIP#VF NE 01
02FA 1302 GO 0302
02FC 6405 V4=05
02FE 243E DO 043E
0300 12E2 GO 02E2
0302 D011 SHOW 1MV0V1
0304 24A4 DO 04A4
0306 4200 SKIP#V2 NE 00
0308 1310 GO 0310
030A 24C0 DO 04C0
030C D011 SHOW 1MV0V1
030E 12E2 GO 02E2
0310 4700 SKIP#V7 NE 00
0312 1358 GO 0358
0314 A54C I=054C
0316 F165 V0:V1=MI
0318 A530 I=0530
031A 6305 V3=05
031C 6415 V4=15
031E D017 SHOW 7MV0V1
0320 F418 TONE=V4
0322 D017 SHOW 7MV0V1
0324 243E DO 043E
0326 73FF V3+FF
0328 3300 SKIP#V3 EQ 00
032A 131C GO 031C
032C 3E0A SKIP#VE EQ 0A
032E 133E GO 033E
0330 80C0 V0=VC
0332 24F4 DO 04F4
0334 8A14 VA=VA+V1
0336 4F01 SKIP#VF NE 01
0338 135E GO 035E
033A 7C01 VC+01
033C 134A GO 034A
033E 80D0 V0=VD
0340 24F4 DO 04F4
0342 8B14 VB=VB+V1
0344 4F01 SKIP#VF NE 01
0346 1362 GO 0362
0348 7D01 VD+01
034A 78FF V8+FF
034C 4800 SKIP#V8 NE 00
034E 1364 GO 0364
0350 3E0A SKIP#VE EQ 0A
0352 120A GO 020A
0354 6E0B VE=0B
0356 120C GO 020C
0358 6430 V4=30
035A F418 TONE=V4
035C 134A GO 034A
035E 6AFF VA=FF
0360 1364 GO 0364
0362 68FF VB=FF
0364 2400 DO 0400
0366 A530 I=0530
0368 9AB0 SKIP#VA NE VB
036A 136A GO 036A
036C 600D V0=0D
036E 6107 V1=07
0370 8BA5 VB=VB-VA
0372 3F00 SKIP#VF EQ 00
0374 602D V0=2D
0376 6440 V4=40
0378 D017 SHOW 7MV0V1
037A 243E DO 043E
037C D017 SHOW 7MV0V1
037E 6440 V4=40
0380 F418 TONE=V4
0382 1376 GO 0376
0384 76AC
0386 7795
0388 CCDC
038A A081
038C 10C0
038E 5544
0390 E42C
0392 07CC
0394 9CD3
0396 4BC8
0398 EE6D
039A 0C40
039C 88DC
039E 8A5C
03A0 E421
03A2 3463
03A4 33B3
03A6 3333
03A8 63B8
03AA 73B3
03AC 8B36
03AE 3135
03B0 3233
03B2 327F
03B4 7331
03B6 9337
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03B8 3293
03BA F332
03BC 03B2
03BE 1334
03C0 9BFF
03C2 F2F7
03C4 BF3F
03C6 BBB2
03C8 B6AC
03CA 7FFB
03CC B3BB
03CE BFDD
03D0 F3FF
03D2 B111
03D4 98B5
03D6 7F3F
03D8 BEAF
03DA 8BB9
03DC 83AD
03DE EAFB
03E0 CCCE
03E2 CCC8
03E4 ECEC
03E6 DACC
03E8 DCFC
03EA CDCA
03EC CC8C
03EE C8E8
03F0 CEEC
03F2 ARCD
03F4 CACC
03F6 CCC4
03F8 CC6C
03FA CCCC
03FC 8DEC
03FE D9CD
0400 00E0 ERASE
0402 6508 V5=08
0404 6610 V6=10
0406 A549 I=0549
0408 FA33 MI=VA(3DD)
040A F265 V0:V2=MI
040C 242C DO 042C
040E 6528 V5=28
0410 A549 I=0549
0412 FB33 MI=VB(3DD)
0414 F265 V0:V2=MI
0416 242C DO 042C
0418 650E V5=0E
041A 6608 V6=08
041C 600A V0=0A
041E F029 I=V0(LSDP)
0420 D565 SHOW 5MV5V6
0422 652E V5=2E
0424 600B V0=0B
0426 F029 I=V0(LSDP)
0428 D565 SHOW 5MV5V6
042A 00EE RET
042C F029 I=V0(LSDP)
042E D565 SHOW 5MV5V6
0430 7506 V5=06
0432 F129 I=V1(LSDP)
0434 D565 SHOW 5MV5V6
0436 7506 V5=06
0438 F229 I=V2(LSDP)
043A D565 SHOW 5MV5V6
043C 00EE RET
043E F415 TIME=V4
0440 F407 V4=TIME
0442 3400 SKIP;V4 EQ 00
0444 1440 GO 0440
0446 00EE PET
0448 4303 SKIP;V3 NE 03
044A 7001 V0+01
044C 4306 SKIP;V3 NE 06
044E 7001 V0+01
0450 4309 SKIP;V3 NE 09
0452 7001 V0+01
0454 4301 SKIP;V3 NE 01
0456 70FF V0+FF
0458 4304 SKIP;V3 NE 04
045A 70FF V0+FF
045C 4307 SKIP;V3 NE 07
045E 70FF V0+FF
0460 4307 SKIP;V3 NE 07
0462 7101 V1+01
0464 4308 SKIP;V3 NE 08
0466 7101 V1+01
0468 4309 SKIP;V3 NE 09
046A 7101 V1+01
046C 4301 SKIP;V3 NE 01
046E 71FF V1+FF
0470 4302 SKIP;V3 NE 02
0472 71FF V1+FF
0474 4303 SKIP;V3 NE 03
0476 71FF V1+FF
0478 00EE RET
047A D015 SHOW 5MV0V1
047C A500 I=0500
047E F71E I=I+V7
0480 4201 SKIP;V2 NE 01
0482 6306 V3=06
0484 4202 SKIP;V2 NE 02
0486 6308 V3=08
0488 4203 SKIP;V2 NE 03
048A 6309 V3=09
048C 4204 SKIP;V2 NE 04
048E 6307 V3=07
0490 4204 SKIP;V2 NE 04
0492 7004 V0+04

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0494	6405	V4=05	0502	0208
0496	F255	MI=V0:V2	0504	0309
0498	2448	DO 0448	0506	0701
049A	74FF	V4+FF	0508	0802
049C	3400	SKIP;V4 EQ 00	050A	0903
049E	1496	GO 0496	050C	0103
04A0	770F	V7+0F	050E	0301
04A2	00EE	RET	0510	0406
04A4	8500	V5=V0	0512	0604
04A6	8610	V6=V1	0514	0709
04A8	A550	I=0550	0516	0907
04AA	8490	V4=V9	0518	0204
04AC	F265	V0:V2=MI	051A	0307
04AE	5050	SKIP;V0 EQ V5	051C	0402
04B0	14E6	GO 04B6	051E	0608
04B2	9160	SKIP;V1 NE V6	0520	0703
04B4	00EE	RET	0522	0806
04B6	74FF	V4+FF	0524	0109
04B8	3400	SKIP;V4 EQ 00	0526	0206
04BA	14AC	GO 04AC	0528	0408
04BC	6200	V2=00	052A	0602
04BE	00EE	RET	052C	0804
04C0	8500	V5=V0	052E	0901
04C2	8610	V6=V1	0530	FCFC
04C4	4201	SKIP;V2 NE 01	0532	FCFC
04C6	A500	I=0500	0534	FCFC
04C8	4202	SKIP;V2 NE 02	0536	FCF8
04CA	A50C	I=050C	0538	0000
04CC	4203	SKIP;V2 NE 03	053A	0000
04CE	A518	I=0518	053C	8080
04D0	4204	SKIP;V2 NE 04	053E	8080
04D2	A524	I=0524	0540	8040
04D4	6206	V2=06	0542	2010
04D6	F165	V0:V1=MI	0544	0810
04D8	9300	SKIP;V3 NE V0	0546	2040
04DA	14EA	GO 04EA	0548	8000
04DC	72FF	V2+FF	054A	0000
04DE	3200	SKIP;V2 EQ 00	054C	1113
04E0	14D6	GO 04D6	054E	1409
04E2	8050	V0=V5	0550	1807
04E4	8160	V1=V6	0552	0319
04E6	A548	I=0548	0554	0803
04E8	00EE	RET	0556	1A09
04EA	8310	V3=V1	0558	0318
04EC	6405	V4=05	055A	0A03
04EE	F418	TONE=V4	055C	1C0B
04F0	7701	V7+01	055E	0324
04F2	14E2	GO 04E2	0560	0704
04F4	6100	V1=00	0562	2308
04F6	8104	V1=V1+V0	0564	0422
04F8	77FF	V7+FF	0566	0904
04FA	3700	SKIP;V7 EQ 00	0568	210A
04FC	14F6	GO 04F6	056A	0420
04FE	00EE	RET	056C	0B04
0500	0107		056E	2000

0570 0321
0572 0103
0574 2202
0576 0323
0578 0303
057A 2404
057C 0313
057E 0004
0580 1201
0582 0411
0584 0204
0586 1003
0588 040F
058A 0404
058C 0F0F
058E 0110
0590 0F01
0592 110F
0594 0112
0596 0F01
0598 130F
059A 010C
059C 0404
059E 0B05
05A0 040A
05A2 0604
05A4 0907
05A6 0408
05A8 0804
05AA 1904
05AC 031A
05AE 0503
05B0 1B06
05B2 031C
05B4 0703
05B6 1D08

05B8 0309
05BA 1003
05BC 0A11
05BE 0308
05C0 1203
05C2 0C13
05C4 030D
05C6 1403
05C8 2C10
05CA 032D
05CC 1103
05CE 2E12
05D0 032F
05D2 1303
05D4 3014
05D6 032B
05D8 1703
05DA 2C18
05DC 032D
05DE 1903
05E0 2E1A
05E2 032F
05E4 1B03
05E6 E6ED
05E8 CDCE
05EA 39D5
05EC A950
05EE 4D10
05F0 6C6E
05F2 27E8
05F4 02B3
05F6 A18D
05F8 B5D0
05FA CFBE
05FC DCE6
05FE D14F

9. VIP Animal Race

ANIMAL RACE is a fun game for one person, with an element of luck—sure to put a smile on your face. Five different animals race against one another and you have the chance to test your expertise at picking the winner.

How To Play Animal Race

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.
3. Wait until the animals are lined up and ready to start, then select an animal by pressing a letter A through E. A mark will appear to the left of the animal to remind you of the one you have selected.

4. Decide how much you want to bet (up to a limit of \$9), then press that key.

5. After the race is over press zero (or any key) to start the next race. Your winnings or losses will be computed and the new total displayed at the beginning of the next race.

Hints for Expert Players

All animals move at approximately the same speed but they start from different positions. The odds for each animal are related to the starting position but include a random element. Some races favor the player and you should bet up to the limit on these. Some races are unfavorable and you should bet carefully on these.

You can win the game by accumulating \$256 or more.

```

0200 6D0A VD=0A
0202 6E02 VE=02
0204 680E V8=0E
0206 690B V9=0B
0208 A5B5 I=05B5
020A 2482 DO 0482
020C 682C V8=2C
020E 2484 DO 0484
0210 681D V8=1D
0212 6918 V9=18
0214 2484 DO 0484
0216 6800 VB=00
0218 6C23 VC=23
021A 2458 DO 0458
021C 24C0 DO 04C0
021E 6821 V8=21
0220 6900 V9=00
0222 A4D8 I=04D8
0224 FB1E I=I+VB
0226 D894 SHOW 4MI@V8V9
0228 FE18 TONE=VE
022A 7B04 VB+04
022C 4B1C SKIP;VB NE 1C
022E 6B04 VB=04
0230 7CFF VC+FF
0232 24C0 DO 04C0
0234 3C00 SKIP;VC EQ 00
0236 121A GO 021A

```

Handwritten notes:
 SUBR #1
 SUBR #2
 #2
 SUBR
 SUBR
 SUBR

```

0238 00E0 ERASE
023A F918 TONE=V9
023C 2458 DO 0458
023E 24C0 DO 04C0
0240 6A00 VA=00
0242 6B0A VB=0A
0244 A600 I=0600
0246 FA1E I=I+VA
0248 F765 V0:V7=MI
024A 620C V2=0C
024C 7401 V4+01
024E FB29 I=VB(LSDP)
0250 D245 SHOW 5MI@V2V4
0252 6213 V2=13
0254 F329 I=V3(LSDP)
0256 D245 SHOW 5MI@V2V4
0258 6217 V2=17
025A A6A0 I=06A0
025C D245 SHOW 5MI@V2V4
025E 7A08 VA+08
0260 7B01 VB+01
0262 3A28 SKIP;VA EQ 28
0264 1244 GO 0244
0266 6820 V8=20
0268 6902 V9=02
026A A5E2 I=05E2
026C 2480 DO 0480

```

```

026E 6226 V2=26
0270 6308 V3=08
0272 D237 SHOW 7MI@V2V3
0274 A5FD I=05FD
0276 FD33 MI=VD(3DD)
0278 F265 V0:V2=MI
027A 632C V3=2C
027C 6409 V4=09
027E 4000 SKIP;V0 NE 00
0280 1288 GO 0288
0282 F029 I=V0(LSDP)
0284 D345 SHOW 5MI@V3V4
0286 128C GO 028C
0288 4100 SKIP;V1 NE 00
028A 1292 GO 0292
028C F129 I=V1(LSDP)
028E 6331 V3=31
0290 D345 SHOW 5MI@V3V4
0292 F229 I=V2(LSDP)
0294 6336 V3=36
0296 D345 SHOW 5MI@V3V4
0298 A680 I=0680
029A 6824 V8=24
029C 6911 V9=11
029E 2484 DO 0484
02A0 6836 V8=36
02A2 A6A5 I=06A5
02A4 D895 SHOW 5MI@V8V9
02A6 6F0A VF=0A
02A8 FF15 TIME=VF
02AA 244A DO 044A
02AC 3010 SKIP;V0 EQ 10
02AE 12B8 GO 02B8
02B0 FF07 VF=TIME
02B2 3F00 SKIP;VF EQ 00
02B4 12AA GO 02AA
02B6 12A4 GO 02A4
02B8 FE18 TONE=VE
02BA 8C00 VC=V0
02BC 6A09 VA=09
02BE 8AC5 VA=VA-VC
02C0 4F01 SKIP;VF NE 01
02C2 12A4 GO 02A4
02C4 4C0F SKIP;VC NE 0F
02C6 12A4 GO 02A4
02C8 D895 SHOW 5MI@V8V9
02CA 4F00 SKIP;VF NE 00
02CC 12C8 GO 02C8
02CE FC29 I=VC(LSDP)
02D0 D895 SHOW 5MI@V8V9
02D2 24A0 DO 04A0
02D4 A5F6 I=05F6
02D6 632C V3=2C
02D8 6417 V4=17
02DA D347 SHOW 7MI@V3V4

02DC 6336 V3=36
02DE 6418 V4=18
02E0 A6A5 I=06A5
02E2 D345 SHOW 5MI@V3V4
02E4 6F0A VF=0A
02E6 FF15 TIME=VF
02E8 244A DO 044A
02EA 3010 SKIP;V0 EQ 10
02EC 12F6 GO 02F6
02EE FF07 VF=TIME
02F0 3F00 SKIP;VF EQ 00
02F2 12E8 GO 02E8
02F4 12E2 GO 02E2
02F6 FE18 TONE=VE
02F8 8B00 VB=V0
02FA 8AD0 VA=VD
02FC 8AB5 VA=VA-VB
02FE 4F00 SKIP;VF NE 00
0300 12E2 GO 02E2
0302 4B00 SKIP;VB NE 00
0304 12E2 GO 02E2
0306 6A09 VA=09
0308 8AB5 VA=VA-VB
030A 4F00 SKIP;VF NE 00
030C 12E2 GO 02E2
030E D345 SHOW 5MI@V3V4
0310 4F00 SKIP;VF NE 00
0312 130E GO 030E
0314 FB29 I=VB(LSDP)
0316 D345 SHOW 5MI@V3V4
0318 2494 DO 0494
031A 00E0 ERASE
031C 24C0 DO 04C0
031E 24A0 DO 04A0
0320 A4D6 I=04D6
0322 6038 V0=38
0324 6100 V1=00
0326 D011 SHOW 1MI@V0V1
0328 7101 V1+01
032A 3120 SKIP;V1 EQ 20
032C 1326 GO 0326
032E 601E V0=1E
0330 610F V1=0F
0332 6A03 VA=03
0334 FA29 I=VA(LSDP)
0336 D015 SHOW 5MI@V0V1
0338 FE18 TONE=VE
033A 2494 DO 0494
033C 7AFF VA+FF
033E D015 SHOW 5MI@V0V1
0340 3A00 SKIP;VA EQ 00
0342 1334 GO 0334
0344 6A00 VA=00
0346 A600 I=0600
0348 FA1E I=I+VA

```

PET
15, D61

BC
2AD0P6T

034A	F665	V0:V6=MI	03B8	D895	SHOW 5MI@V8V9
034C	A600	I=0600	03BA	89F3	
034E	FA1E	I=I+VA	03BC	13B2	GO 03B2
0350	70FF	V0+FF	03BE	00EE	RET
0352	4000	SKIP;V0 NE 00	03C0	A68A	I=068A
0354	135A	GO 035A	03C2	2484	DO 0484
0356	F055	MI=V0:V0	03C4	24B2	DO 04B2
0358	1372	GO 0372	03C6	A600	I=0600
035A	C001	V0=RND	03C8	FA1E	I=I+VA
035C	7002	V0+02	03CA	F665	V0:V6=MI
035E	9150	SKIP;V1 NE V5	03CC	6700	V7=00
0360	8165	V1=V1-V6	03CE	87B4	V7=V7+VB
0362	7106	V1+06	03D0	73FF	V3+FF
0364	7201	V2+01	03D2	3300	SKIP;V3 EQ 00
0366	F255	MI=V0:V2	03D4	13CE	GO 03CE
0368	A500	I=0500	03D6	A5FD	I=05FD
036A	F11E	I=I+V1	03D8	F733	MI=V7(3DD)
036C	D246	SHOW 6MI@V2V4	03DA	F265	V0:V2=MI
036E	4238	SKIP;V2 NE 38	03DC	4100	SKIP;V1 NE 00
0370	1380	GO 0380	03DE	13E4	GO 03E4
0372	7A08	VA+08	03E0	F129	I=V1(LSDP)
0374	4A18	SKIP;VA NE 18	03E2	2486	DO 0486
0376	FE18	TONE=VE	03E4	F229	I=V2(LSDP)
0378	3A28	SKIP;VA EQ 28	03E6	D895	SHOW 5MI@V8V9
037A	1346	GO 0346	03E8	8D74	VD=VD+V7
037C	FE18	TONE=VE	03EA	4F01	SKIP;VF NE 01
037E	1344	GO 0344	03EC	140C	GO 040C
0380	F218	TONE=V2	03EE	A600	I=0600
0382	6806	V8=06	03F0	FA1E	I=I+VA
0384	6908	V9=08	03F2	F665	V0:V6=MI
0386	A5E2	I=05E2	03F4	A500	I=0500
0388	2484	DO 0484	03F6	F11E	I=I+V1
038A	87A6		03F8	D245	SHOW 5MI@V2V4
038C	8776		03FA	6F18	VF=18
038E	8776		03FC	FF15	TIME=VF
0390	770A	V7+0A	03FE	FF07	VF=TIME
0392	97C0	SKIP;V7 NE VC	0400	244A	DO 044A
0394	13C0	GO 03C0	0402	3010	SKIP;V0 EQ 10
0396	A694	I=0694	0404	1238	GO 0238
0398	2484	DO 0484	0406	3F00	SKIP;VF EQ 00
039A	24B2	DO 04B2	0408	13FE	GO 03FE
039C	FB29	I=VB(LSDP)	040A	13F8	GO 03F8
039E	8DB5	VD=VD-V8	040C	2490	DO 0490
03A0	D895	SHOW 5MI@V8V9	040E	00E0	ERASE
03A2	3D00	SKIP;VD EQ 00	0410	640E	V4=0E
03A4	13EE	GO 03EE	0412	6200	V2=00
03A6	2490	DO 0490	0414	6140	V1=40
03A8	D895	SHOW 5MI@V8V9	0416	A5E2	I=05E2
03AA	24B2	DO 04B2	0418	6806	V8=06
03AC	A525	I=0525	041A	6908	V9=08
03AE	6808	V8=08	041C	2484	DO 0484
03B0	6903	V9=03	041E	A68A	I=068A
03B2	D895	SHOW 5MI@V8V9	0420	2484	DO 0484
03B4	6F10	VF=10	0422	A600	I=0600
03B6	2496	DO 0496	0424	F11E	I=I+V1

```

0426 D248 SHOW 8MI@V2V4
0428 7201 V2+01
042A 3240 SKIP;V2 EQ 40
042C 1436 GO 0436
042E 7409 V4+09
0430 3420 SKIP;V4 EQ 20
0432 1412 GO 0412
0434 140E GO 040E
0436 7108 V1+08
0438 4178 SKIP;V1 NE 78
043A 6148 V1=48
043C 6D07 VD=07
043E 8D22 VD=VD&V2
0440 4D00 SKIP;VD NE 00
0442 1416 GO 0416
0444 6F04 VF=04
0446 2496 DO 0496
0448 1422 GO 0422
044A 6000 V0=00
044C E0A1 SKIP;V0 NE KEY
044E 00EE RET
0450 7001 V0+01
0452 4010 SKIP;V0 NE 10
0454 00EE RET
0456 144C GO 044C
0458 A600 I=0600
045A 6100 V1=00
045C 6604 V6=04
045E 2466 DO 0466
0460 2466 DO 0466
0462 2466 DO 0466
0464 2466 DO 0466
0466 C001 V0=RND
0468 7001 V0+01
046A C203 V2=PND
046C 872E
046E 6306 V3=06
0470 8375 V3=V3-V7
0472 C701 V7=RND
0474 8374 V3=V3+V7
0476 8304 V3=V3+V0
0478 F355 MI=V0:V3
047A 7124 V1+24
047C F61E I=I+V6
047E 00EE RET
0480 2486 DO 0486
0482 2486 DO 0486
0484 2486 DO 0486
0486 D895 SHOW 5MI@V8V9
0488 6F05 VF=05
048A FF1E I=I+VF
048C 7808 V8+08
048E 00EE RET
0490 2492 DO 0492
0492 2494 DO 0494

```

```

0494 6F3C VF=3C
0496 FF15 TIME=VF
0498 FF07 VF=TIME
049A 3F00 SKIP;VF EQ 00
049C 1498 GO 0498
049E 00EE RET
04A0 A69E I=069E
04A2 6800 V8=00
04A4 89CE
04A6 899E
04A8 899E
04AA 89C5 V9=V9-VC
04AC 79B8 V9+BB
04AE D892 SHOW 2MI@V8V9
04B0 00EE RET
04B2 A5F6 I=05F6
04B4 6808 V8=08
04B6 6910 V9=10
04B8 D897 SHOW 7MI@V8V9
04BA 6810 V8=10
04BC 6911 V9=11
04BE 00EE RET
04C0 6A00 VA=00
04C2 A600 I=0600
04C4 FA1E I=I+VA
04C6 F465 V0:V4=MI
04C8 A500 I=0500
04CA F11E I=I+V1
04CC D246 SHOW 6MI@V2V4
04CE 7A08 VA+08
04D0 3A28 SKIP;VA EQ 28
04D2 14C2 GO 04C2
04D4 00EE RET
04D6 0101
04D8 817E
04DA 1800
04DC 9942
04DE D800
04E0 0000
04E2 8181
04E4 0000
04E6 00C3
04E8 3C66
04EA 1842
04EC 42C3
04EE 4200
04F0 E7E7
04F2 0000
04F4 00EE
04F6 8E8A
04F8 8A8A
04FA EEEE
04FC 88EC
04FE 28EE
0500 0302

```

0502 020E
0504 0A0A
0506 0506
0508 0612
050A 1E05
050C 0506
050E 0612
0510 1E28
0512 0506
0514 0612
0516 1E10
0518 0506
051A 0612
051C 1E02
051E 0506
0520 0612
0522 1E05
0524 003F
0526 3F3D
0528 2524
052A 0041
052C 4147
052E 6E0A
0530 0041
0532 4147
0534 6D90
0536 0041
0538 4147
053A 6F00
053C 0041
053E 4147
0540 6E12
0542 0041
0544 4147
0546 6D90
0548 0003
054A 060E
054C 1426
054E 0005
0550 0A22
0552 2040
0554 0300
0556 0268
0558 3618
055A 060F
055C 1A16
055E 4803
0560 0005
0562 0A42
0564 0C00
0566 0005
0568 0A42
056A 0000
056C 0008
056E 1E3E

0570 2222
0572 001D
0574 2242
0576 6605
0578 001D
057A 2242
057C 6680
057E 001D
0580 2242
0582 6610
0584 001D
0586 2242
0588 6608
058A 001D
058C 2242
058E 6601
0590 0002
0592 131E
0594 1212
0596 0217
0598 382E
059A 0624
059C 0424
059E 2F3A
05A0 5611
05A2 0006
05A4 3522
05A6 3628
05A8 0006
05AA 3522
05AC 3600
05AE 0217
05B0 382E
05B2 0628
05B4 01E9
05B6 ADEB
05B8 A9A9
05BA 5158
05BC 5551
05BE 5174
05C0 5474
05C2 5457
05C4 F795
05C6 F7A5
05C8 9577
05CA 4446
05CC 4477
05CE EFA8
05D0 AEE2
05D2 BEF3
05D4 9293
05D6 929F
05D8 1715
05DA 1711
05DC 1177

05DE 1517	0644 5E04
05E0 1517	0646 2654
05E2 2B2A	0648 0506
05E4 1212	064A 06D2
05E6 13A8	064C A24C
05E8 A8A8	064E E6C1
05EA A8B8	0650 0506
05EC AEAA	0652 C6D2
05EE ECAA	0654 E2CC
05F0 AAAE	0656 B890
05F2 A8AE	0658 0586
05F4 A84E	065A 0652
05F6 2078	065C 224C
05F8 A070	065E 5E60
05FA 28F0	0660 0506
05FC 2000	0662 86D2
05FE 0100	0664 A28C
0600 0200	0666 C6C1
0602 0302	0668 0506
0604 001E	066A 8692
0606 1800	066C 228C
0608 0124	066E 9830
060A 0301	0670 0506
060C 0642	0672 0612
060E 1200	0674 620C
0610 0148	0676 3E10
0612 0008	0678 00EE
0614 0D66	067A 631A
0616 1800	067C 24C0
0618 026C	067E 00EE
061A 0303	0680 F090
061C 138A	0682 F790
061E 1800	0684 9078
0620 0190	0686 4070
0622 0301	0688 4078
0624 1AAE	068A ABA9
0626 1800	068C A9A9
0628 0108	068E 53A2
062A 3806	0690 322A
062C 0018	0692 26A2
062E 1801	0694 8E8A
0630 0104	0696 8A8A
0632 3100	0698 EEEE
0634 0518	069A 88EC
0636 1801	069C 28EE
0638 7F48	069E C0C0
063A 1C1C	06A0 1848
063C 0B4C	06A2 0848
063E 1800	06A4 1CE0
0640 0302	06A6 2060
0642 020E	06A8 0040

10. VIP Most Dangerous Game

VIP MOST DANGEROUS GAME pits a hunter against a hunted in a maze. The hunter must shoot the hunted before either time runs out or the hunted escapes the maze. However, neither the hunted nor the hunter can see a wall in the maze until he runs into it. There is always at least one path through the maze.

How To Play VIP Most Dangerous Game

1. Load the CHIP-8 interpreter at 0000-01FF and the game program starting at 0200.

2. Turn RUN switch on.

3. Hunted's turn:

When the arrow appears in the lower left, it is the hunted's turn. Keys 2-4-6-8 control direction (up-left-right-down, respectively). The hunted continues to move until a) he makes 5 moves, b) he hits a wall, or c) key 0 is pressed.

4. Hunter's turn:

When the arrow appears in the lower right, it is the hunter's turn. The hunter's turn consists of two modes, the move and the shoot. Keys 2-4-6-8 and 0 control both modes. Like the hunted, the hunter continues to move until a) he makes 3 moves, b) he hits a wall, or c) key 0 is pressed. If he hits the wall, case b), he cannot fire a bullet. The hunter may fire one of his bullets using the direction keys 2-4-6-8. The bullet will travel four squares in the corresponding direction, unless a wall is encountered. If the hunter prefers not to use a bullet, he must press key 0.

5. Repeat steps 4 and 5 until:

a) The number of turns (upper left on the display) expire. The hunted wins.

b) The hunter lands on or shoots the hunted. The hunter wins.

c) The hunted lands on the hunter, thereby giving up. The hunter wins.

d) The hunted reaches the lower right corner of the maze with at least 1 move remaining in his turn. The hunted wins, by escaping the maze.

6. Variations of VIP MOST DANGEROUS GAME may be played by changing certain bytes in the program.

LOCATION	DEFAULT	MEANING
0215	0F	Number of turns in the game.
0217	06	Number of bullets hunter has at start.
0219	03	Number of moves per turn for the hunter.
0221	01	Number of squares per move (hunted and hunter).
022B	05	Number of moves per turn for the hunted.
024B	01	If zero, walls are invisible.
0355	04	Number of squares a bullet will go.
04E3	70	Probability (out of 100 _{hex}) of a wall appearing.
04EB	FE	If FF, a wall may appear at previously tested boundaries.

```

0200 6001 V0=01
0202 A5F0 I=05F0
0204 F055 MI=V0:V0
0206 60FF V0=FF
0208 6100 V1=00
020A F055 MI=V0:V0
020C 7101 V1+01
020E 3180 SKIP#V1 EQ 80
0210 120A GO 020A
0212 00E0 ERASE
0214 600F V0=0F
0216 6106 V1=06
0218 6203 V2=03
021A 6300 V3=00
021C 642E V4=2E
021E 651E V5=1E
0220 6601 V6=01
0222 A671 I=0671
0224 F655 MI=V0:V6
0226 A5EF I=05EF
0228 D451 SHOW 1MV4V5
022A 6205 V2=05
022C 6412 V4=12
022E 6502 V5=02
0230 D451 SHOW 1MV4V5
0232 A678 I=0678
0234 F655 MI=V0:V6
0236 A5EF I=05EF
0238 6204 V2=04
023A 6114 V1=14
023C D121 SHOW 1MV1V2
023E 7104 V1+04
0240 3130 SKIP#V1 EQ 30
0242 123C GO 023C
0244 7204 V2+04
0246 3220 SKIP#V2 EQ 20
0248 123A GO 023A
024A 6E01 VE=01
024C A671 I=0671
024E 22D6 DO 02D6
0250 2310 DO 0310
0252 2372 DO 0372
0254 3F00 SKIP#VF EQ 00
0256 126A GO 026A
0258 2310 DO 0310
025A 231A DO 031A
025C 2332 DO 0332
025E 3F00 SKIP#VF EQ 00
0260 1288 GO 0288
0262 231A DO 031A
0264 A682 I=0682
0266 22D6 DO 02D6
0268 124C GO 024C
026A 3F01 SKIP#VF EQ 01
026C 128C GO 028C

026E 00E0 ERASE
0270 6005 V0=05
0272 22A6 DO 02A6
0274 2310 DO 0310
0276 2424 DO 0424
0278 2310 DO 0310
027A 22A6 DO 02A6
027C 22A6 DO 02A6
027E 2310 DO 0310
0280 70FF V0+FF
0282 3000 SKIP#V0 EQ 00
0284 1272 GO 0272
0286 1200 GO 0200
0288 3F01 SKIP#VF EQ 01
028A 126E GO 026E
028C 00E0 ERASE
028E 6005 V0=05
0290 22A6 DO 02A6
0292 231A DO 031A
0294 2424 DO 0424
0296 231A DO 031A
0298 22A6 DO 02A6
029A 22A6 DO 02A6
029C 231A DO 031A
029E 70FF V0+FF
02A0 3000 SKIP#V0 EQ 00
02A2 1290 GO 0290
02A4 1200 GO 0200
02A6 6A10 VA=10
02A8 6B10 VB=10
02AA A5C8 I=05C8
02AC DAB5 SHOW 5MVAVB
02AE 7A08 VA+08
02B0 A5CD I=05CD
02B2 DAB5 SHOW 5MVAVB
02B4 7A08 VA+08
02B6 A5D2 I=05D2
02B8 DAB5 SHOW 5MVAVB
02BA 7A08 VA+08
02BC A5D7 I=05D7
02BE DAB5 SHOW 5MVAVB
02C0 00EE RET
02C2 0100
02C4 0000
02C6 0000
02C8 0000
02CA 0000
02CC 0000
02CE 0000
02D0 0000
02D2 0000
02D4 00D4
02D6 F165 V0:V1=MI
02D8 A682 I=0682
02DA F155 MI=V0:V1

```

```

02DC 8310 V3=V1
02DE 6A01 VA=01
02E0 6B04 VB=04
02E2 22EC DO 02EC
02E4 8030 V0=V3
02E6 6A33 VA=33
02E8 22EC DO 02EC
02EA 00EE RET
02EC A67F I=067F
02EE F033 MI=V0(3DD)
02F0 F265 V0:V2=MI
02F2 4000 SKIP#V0 NE 00
02F4 1308 GO 0308
02F6 F029 I=V0(LSDP)
02F8 DAB5 SHOW 5MVAVB
02FA 7A05 VA+05
02FC F129 I=V1(LSDP)
02FE DAB5 SHOW 5MVAVB
0300 7A05 VA+05
0302 F229 I=V2(LSDP)
0304 DAB5 SHOW 5MVAVB
0306 00EE RET
0308 4100 SKIP#V1 NE 00
030A 1300 GO 0300
030C 7A02 VA+02
030E 12FC GO 02FC
0310 6A03 VA=03
0312 6B17 VB=17
0314 A5DC I=05DC
0316 DAB7 SHOW 7MVAVB
0318 00EE RET
031A 6A37 VA=37
031C 6B17 VB=17
031E A5E3 I=05E3
0320 DAB7 SHOW 7MVAVB
0322 00EE RET
0324 0100
0326 0000
0328 0000
032A 0000
032C 0000
032E 0000
0330 0004
0332 A671 I=0671
0334 F665 V0:V6=MI
0336 23A0 DO 03A0
0338 3F03 SKIP#VF EQ 03
033A 1342 GO 0342
033C 72FF V2+FF
033E 3200 SKIP#V2 EQ 00
0340 1336 GO 0336
0342 A671 I=0671
0344 F265 V0:V2=MI
0346 A671 I=0671
0348 F655 MI=V0:V6
034A 4F01 SKIP#VF NE 01
034C 00EE RET
034E 3F02 SKIP#VF EQ 02
0350 4100 SKIP#V1 NE 00
0352 1364 GO 0364
0354 6604 V6=04
0356 6301 V3=01
0358 23A0 DO 03A0
035A 4F00 SKIP#VF NE 00
035C 1364 GO 0364
035E 71FF V1+FF
0360 4F01 SKIP#VF NE 01
0362 00EE RET
0364 70FF V0+FF
0366 6F00 VF=00
0368 4000 SKIP#V0 NE 00
036A 6FFF VF=FF
036C A671 I=0671
036E F155 MI=V0:V1
0370 00EE RET
0372 A678 I=0678
0374 F665 V0:V6=MI
0376 442E SKIP#V4 NE 2E
0378 351E SKIP#V5 EQ 1E
037A 1380 GO 0380
037C 6F01 VF=01
037E 00EE RET
0380 23A0 DO 03A0
0382 4F01 SKIP#VF NE 01
0384 139C GO 039C
0386 3F03 SKIP#VF EQ 03
0388 1390 GO 0390
038A 72FF V2+FF
038C 3200 SKIP#V2 EQ 00
038E 1376 GO 0376
0390 6F00 VF=00
0392 A678 I=0678
0394 F265 V0:V2=MI
0396 A678 I=0678
0398 F655 MI=V0:V6
039A 00EE RET
039C 6FFF VF=FF
039E 00EE RET
03A0 A684 I=0684
03A2 F955 MI=V0:V9
03A4 A5EF I=05EF
03A6 2430 DO 0430
03A8 6F00 VF=00
03AA 4000 SKIP#V0 NE 00
03AC 13F6 GO 03F6
03AE 4301 SKIP#V3 NE 01
03B0 D451 SHOW 1MV4V5
03B2 6C00 VC=00
03B4 6D00 VD=00
03B6 4002 SKIP#V0 NE 02

```

```

03B8 6CFF VC=FF
03BA 4004 SKIP;V0 NE 04
03BC 6DFF VD=FF
03BE 4006 SKIP;V0 NE 06
03C0 6D01 VD=01
03C2 4008 SKIP;V0 NE 08
03C4 6C01 VC=01
03C6 8A40 VA=V4
03C8 8B50 VB=V5
03CA 241A DO 041A
03CC 2424 DO 0424
03CE 241A DO 041A
03D0 24AE DO 04AE
03D2 A5EF I=05EF
03D4 4000 SKIP;V0 NE 00
03D6 1404 GO 0404
03D8 241A DO 041A
03DA 2424 DO 0424
03DC 241A DO 041A
03DE 4F01 SKIP;VF NE 01
03E0 1412 GO 0412
03E2 84A0 V4=VA
03E4 85B0 V5=VB
03E6 76FF V6=VF
03E8 3600 SKIP;V6 EQ 00
03EA 13CA GO 03CA
03EC 6D02 VD=02
03EE FD18 TONE=VD
03F0 4301 SKIP;V3 NE 01
03F2 DAB1 SHOW 1MVA VB
03F4 6F03 VF=03
03F6 A684 I=0684
03F8 8A40 VA=V4
03FA 8B50 VB=V5
03FC F965 V0:V9=MI
03FE 84A0 V4=VA
0400 85B0 V5=VB
0402 00EE RET
0404 6D10 VD=10
0406 FD18 TONE=VD
0408 DAB1 SHOW 1MVA VB
040A 4303 SKIP;V3 NE 00
040C D451 SHOW 1MV4V5
040E 6F02 VF=02
0410 13F6 GO 03F6
0412 6D20 VD=20
0414 FD18 TONE=VD
0416 6F01 VF=01
0418 13F6 GO 03F6
041A DAB1 SHOW 1MVA VR
041C 8AD4 VA=VA+VD
041E 8BC4 VB=VB+VC
0420 DAB1 SHOW 1MVA VB
0422 00EE RET
0424 6808 V8=08
0426 F815 TIME=V8
0428 F807 V8=TIME
042A 3800 SKIP;V8 EQ 00
042C 1428 GO 0428
042E 00EE RET
0430 6000 V0=00
0432 D451 SHOW 1MV4V5
0434 E0A1 SKIP;V0 NE KEY
0436 1440 GO 0440
0438 7002 V0+02
043A 300A SKIP;V0 EQ 0A
043C 1434 GO 0434
043E 1430 GO 0430
0440 6D08 VD=08
0442 FD18 TONE=VD
0444 3F00 SKIP;VF EQ 00
0446 D451 SHOW 1MV4V5
0448 E0A1 SKIP;V0 NE KEY
044A 1448 GO 0448
044C 00EE RET
044E 841E
0450 844E
0452 852E
0454 8326
0456 3F01 SKIP;VF EQ 01
0458 1464 GO 0464
045A 7410 V4+10
045C 75FF V5+FF
045E A5EC I=05EC
0460 D453 SHOW 3MV4V5
0462 00EE RET
0464 7411 V4+11
0466 A5EA I=05EA
0468 D451 SHOW 1MV4V5
046A 00EE RET
046C 0100
046E 00D4
0470 A4A0 I=04A0
0472 810E
0474 8014 V0=V0+V1
0476 F01E I=I+V0
0478 F265 V0:V2=MI
047A A5F1 I=05F1
047C 8084 V0=V0+V8
047E F01E I=I+V0
0480 F065 V0:V0=MI
0482 F11E I=I+V1
0484 8100 V1=V0
0486 F065 V0:V0=MI
0488 F21E I=I+V2
048A 8210 V2=V1
048C 8205 V2=V2-V0
048E 3F00 SKIP;VF EQ 00
0490 8100 V1=V0
0492 F065 V0:V0=MI

```

```

0494 8200 V2=V0
0496 8215 V2=V2-V1
0498 3F00 SKIP;VF EQ 00
049A 8010 V0=V1
049C 00EE RET
049E 0100
04A0 0700
04A2 07F0
04A4 0600
04A6 F907
04A8 07F8
04AA 0608
04AC 00D4
04AE 6000 V0=00
04B0 3A10 SKIP;VA EQ 10
04B2 4A30 SKIP;VA NE 30
04B4 00EE RET
04B6 3B00 SKIP;VB EQ 00
04B8 4B20 SKIP;VB NE 20
04BA 00EE RET
04BC 81A6
04BE 8116
04C0 71FC V1+FC
04C2 82B6
04C4 A68E I=068E
04C6 FF55 MI=V0:VF
04C8 882E
04CA 888E
04CC 888E
04CE 8814 V8=V8+V1
04D0 A5F1 I=05F1
04D2 F81E I=I+V8
04D4 F065 V0:V0=MI
04D6 40FF SKIP;V0 NE FF
04D8 14E0 GO 04E0
04DA 40FE SKIP;V0 NE FE
04DC 158E GO 05BE
04DE 15AA GO 05AA
04E0 C3FF V3=RND
04E2 6670 V6=70
04E4 8364 V3=V3+V6
04E6 4F01 SKIP;VF NE 01
04E8 14F4 GO 04F4
04EA 60FE V0=FE
04EC A5F1 I=05F1
04EE F81E I=I+V8
04F0 F055 MI=V0:V0
04F2 15BE GO 05BE
04F4 8326
04F6 3F01 SKIP;VF EQ 01
04F8 151E GO 051E
04FA 3201 SKIP;V2 EQ 01
04FC 1508 GO 0508
04FE 6A00 VA=00
0500 6000 V0=00
0502 2470 DO 0470
0504 8B00 VB=V0
0506 1542 GO 0542
0508 320F SKIP;V2 EQ 0F
050A 1516 GO 0516
050C 6B00 VB=00
050E 6001 V0=01
0510 2470 DO 0470
0512 8A00 VA=V0
0514 1542 GO 0542
0516 6001 V0=01
0518 2470 DO 0470
051A 8A00 VA=V0
051C 1500 GO 0500
051E 3100 SKIP;V1 EQ 00
0520 152C GO 052C
0522 6A00 VA=00
0524 6002 V0=02
0526 2470 DO 0470
0528 8B00 VB=V0
052A 1542 GO 0542
052C 3107 SKIP;V1 EQ 07
052E 153A GO 053A
0530 6B00 VB=00
0532 6003 V0=03
0534 2470 DO 0470
0536 8A00 VA=V0
0538 1542 GO 0542
053A 6003 V0=03
053C 2470 DO 0470
053E 8A00 VA=V0
0540 1524 GO 0524
0542 5AB0 SKIP;VA EQ VB
0544 1564 GO 0564
0546 3AFE SKIP;VA EQ FE
0548 4AFF SKIP;VA NE FF
054A 1556 GO 0556
054C A5F1 I=05F1
054E F81E I=I+V8
0550 60FE V0=FE
0552 F055 MI=V0:V0
0554 15BE GO 05BE
0556 A5F0 I=05F0
0558 F065 V0:V0=MI
055A 7001 V0+01
055C A5F0 I=05F0
055E F055 MI=V0:V0
0560 8A00 VA=V0
0562 1596 GO 0596
0564 83A0 V3=VA
0566 83B5 V3=V3-VB
0568 4F00 SKIP;VF NE 00
056A 1572 GO 0572
056C 83A0 V3=VA
056E 8AB0 VA=VB

```

0570 8B30 VB=V3
0572 4AFE SKIP;VA NE FE
0574 1556 GO 0556
0576 3BFE SKIP;VB EQ FE
0578 4BFF SKIP;VB NE FF
057A 1596 GO 0596
057C 63FF V3=FF
057E A5F1 I=05F1
0580 4380 SKIP;V3 NE 80
0582 1596 GO 0596
0584 F065 V0:V0=MI
0586 7301 V3+01
0588 5B00 SKIP;VB EQ V0
058A 1580 GO 0580
058C A5F1 I=05F1
058E F31E I=I+V3
0590 80A0 V0=VA
0592 F055 MI=V0:V0
0594 1580 GO 0580
0596 A5F1 I=05F1
0598 F81E I=I+V8
059A 80A0 V0=VA
059C F055 MI=V0:V0
059E 4E00 SKIP;VE NE 00
05A0 15AA GO 05AA
05A2 A68E I=068E
05A4 F265 V0:V2=MI
05A6 244E DO 044E
05A8 15AA GO 05AA
05AA A68E I=068E
05AC FF65 V0:VF=MI
05AE 244E DO 044E
05B0 6D1E VD=1E

05B2 FD18 TONE=VD
05B4 244E DO 044E
05B6 A68E I=068E
05B8 F565 V0:V5=MI
05BA 6000 V0=00
05BC 00EE RET
05BE A68E I=068E
05C0 FF65 V0:VF=MI
05C2 6001 V0=01
05C4 00EE RET
05C6 0100
05C8 8A8A
05CA AADA
05CC 8A8A
05CE CBAA
05D0 9A8A
05D2 2F28
05D4 AE68
05D6 2F7B
05D8 4B7B
05DA 504B
05DC 1020
05DE 40BF
05E0 4020
05E2 1008
05E4 0402
05E6 FD02
05E8 0408
05EA E000
05EC 8080
05EE 8080
05F0 00D4

11. VIP Sum Fun

The object of this game is to add up the three digits which appear in the middle of the screen and then hit the key representing the total as fast as you can.

How To Play VIP Sum Fun

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.

3. You get twenty sets of three digits per game and between zero and ten points per set. The faster you enter the correct total, the more points you win.

4. If you wait more than 3 seconds you get zero points. The correct sum is shown above the three digits after you enter it, and there is a pause before the next set appears.

5. The score is shown in the upper right-hand corner of the screen. The maximum number of points you can score is 200. Between 120 and 159 points is above average. A score of 160 or higher is outstanding.

```

0200 00E0 ERASE
0202 6A00 VA=00
0204 2262 D0 0262
0206 6380 V3=80
0208 228A D0 028A
020A 6514 V5=14
020C C003 V0=RND
020E C103 V1=RND
0210 C203 V2=RND
0212 6400 V4=00
0214 8404 V4=V4+V0
0216 8414 V4=V4+V1
0218 8424 V4=V4+V2
021A 225A D0 025A
021C 12A4 GO 02A4
021E 6390 V3=90
0220 2282 D0 0282
0222 E4A1 SKIP;V4 NE KEY
0224 122C GO 022C
0226 3600 SKIP;V6 EQ 00
0228 76FF V6+FF
022A 121E GO 021E
022C 2294 D0 0294
022E 6310 V3=10
0230 2282 D0 0282
0232 229A D0 029A
0234 6380 V3=80
0236 228A D0 028A

```

```

0238 00E0 ERASE
023A 8A64 VA=VA+V6
023C 2262 D0 0262
023E 75FF V5+FF
0240 4500 SKIP;V5 NE 00
0242 124A GO 024A
0244 6360 V3=60
0246 228A D0 028A
0248 120C GO 020C
024A 6412 V4=12
024C F418 TONE=V4
024E 631A V3=1A
0250 228A D0 028A
0252 74FE V4+FE
0254 3400 SKIP;V4 EQ 00
0256 124C GO 024C
0258 1258 GO 0258
025A 6810 V8=10
025C 6913 V9=13
025E 2270 D0 0270
0260 00EE RET
0262 6830 V8=30
0264 6900 V9=00
0266 A2B0 I=02B0
0268 FA33 MI=VA(3DD)
026A F265 V0:V2=MI
026C 2270 D0 0270

```

```
026E 00EE RET
0270 F029 I=V0(LSDP)
0272 D895 SHOW 5MI@V8V9
0274 7806 V8+06
0276 F129 I=V1(LSDP)
0278 D895 SHOW 5MI@V8V9
027A 7806 V8+06
027C F229 I=V2(LSDP)
027E D895 SHOW 5MI@V8V9
0280 00EE RET
0282 73FF V3+FF
0284 3300 SKIP#V3 EQ 00
0286 1282 GO 0282
0288 00EE RET
028A F315 TIME=V3
028C F307 V3=TIME
028E 3300 SKIP#V3 EQ 00
```

```
0290 128C GO 028C
0292 00EE RET
0294 6302 V3=02
0296 F318 TONE=V3
0298 00EE RET
029A 6816 V8=16
029C 690A V9=0A
029E F429 I=V4(LSDP)
02A0 D895 SHOW 5MI@V8V9
02A2 00EE RET
02A4 660A V6=0A
02A6 6380 V3=80
02A8 2282 DO 0282
02AA E4A1 SKIP#V4 NE KEY
02AC 122C GO 022C
02AE 121E GO 021E
```

12. VIP Sequence Shoot

You score points by having the sharp-shooter hit the targets in the proper sequence.

How To Play VIP Sequence Shoot

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Turn RUN switch on.
3. Pressing the key C causes the little man to shoot the top target, key D shoots the one below it, key E the next lower, and key F the bottom target.

4. One of the four targets flashes and the computer waits for you to shoot it. When you press the correct key you get one point. Then two flash, one after the other. Shoot the one that flashed first, then shoot the other. This gives you two more points. Three targets (when hit in the same order as they flashed) add three points to your score.

5. Each time you shoot such a series of targets in proper sequence, your score increases by the number of targets you hit. And the next series you see is longer by one target. The maximum length of sequence is 22 targets, that is a score of 254.

6. Improper sequencing of shots in any series ends the game.

```

0200 00E0 ERASE
0202 6E00 VE=00
0204 6D00 VD=00
0206 A326 I=0326
0208 6808 V8=08
020A 6908 V9=08
020C D89C SHOW CMI@V8V9
020E A332 I=0332
0210 6917 V9=17
0212 D899 SHOW 9MI@V8V9
0214 A33B I=033B
0216 6810 V8=10
0218 6913 V9=13
021A D892 SHOW 2MI@V8V9
021C 6832 V8=32
021E 6902 V9=02
0220 2312 DO 0312
0222 690A V9=0A
0224 2312 DO 0312
0226 6912 V9=12
0228 2312 DO 0312
022A 691A V9=1A
022C 2312 DO 0312
022E 22F6 DO 02F6
0230 61FF V1=FF
0232 2318 DO 0318
0234 6C00 VC=00
0236 7D01 VD=01

```

```

0238 8AD0 VA=VD
023A 2270 DO 0270
023C 7AFF VA+FF
023E 3A00 SKIP$VA EQ 00
0240 123A GO 023A
0242 6000 V0=00
0244 A400 I=0400
0246 FC1E I=I+VC
0248 F055 MI=V0:V0
024A 22AC DO 02AC
024C 3A00 SKIP$VA EQ 00
024E 125A GO 025A
0250 22F6 DO 02F6
0252 8ED4 VE=VE+VD
0254 22F6 DO 02F6
0256 3E16 SKIP$VE EQ 16
0258 1232 GO 0232
025A 6212 V2=12
025C F218 TONE=V2
025E 611A V1=1A
0260 F115 TIME=V1
0262 F107 V1=TIME
0264 3100 SKIP$V1 EQ 00
0266 1262 GO 0262
0268 72FE V2+FE
026A 3200 SKIP$V2 EQ 00
026C 125C GO 025C

```

```

026E 126E GO 026E
~0270 CB03 VB=RND
0272 7B0C VB=0C
0274 8B0B V0=VB
0276 A400 I=0400
0278 FC1E I=I+VC
027A F055 MI=V0:V0
027C 7C01 VC+01
027E 61FF V1=FF
0280 2318 DO 0318
0282 6832 V8=32
0284 691A V9=1A
0286 4B0C SKIP;VB NE 0C
0288 6902 V9=02
028A 4B0D SKIP;VB NE 0D
028C 690A V9=0A
028E 4B0E SKIP;VB NE 0E
0290 6912 V9=12
0292 2312 DO 0312
0294 6160 V1=60
0296 2318 DO 0318
0298 2312 DO 0312
029A 610F V1=0F
029C 2318 DO 0318
029E 2312 DO 0312
02A0 610F V1=0F
02A2 2318 DO 0318
02A4 2312 DO 0312
02A6 610F V1=0F
02A8 2318 DO 0318
02AA 00EE RET
02AC 6A00 VA=00
02AE A400 I=0400
02B0 FA1E I=I+VA
02B2 7A01 VA+01
02B4 F065 V0:V0=MI
02B6 3000 SKIP;V0 EQ 00
02B8 12BE GO 02BE
02BA 6A00 VA=00
02BC 00EE RET
02BE FB0A VB=KEY
02C0 6102 V1=02
02C2 F218 TONE=V2
02C4 8B05 VB=VB-V0
02C6 4B00 SKIP;VB NE 00
02C8 12D2 GO 02D2
02CA 61FF V1=FF
02CC 2318 DO 0318
02CE 6A01 VA=01
02D0 00EE RET
02D2 70F2 V0+V2
02D4 6813 V8=13
02D6 6913 V9=13
02D8 A321 I=0321
02DA D891 SHOW 1MI@V8V9
02DC 6108 V1=08
02DE 2318 DO 0318
02E0 4F01 SKIP;VF NE 01
02E2 12F0 GO 02F0
02E4 D891 SHOW 1MI@V8V9
02E6 6108 V1=08
02E8 2318 DO 0318
02EA 7804 V8+04
02EC 8904 V9=V9+V0
02EE 12DA GO 02DA
02F0 6102 V1=02
02F2 F118 TONE=V1
02F4 1340 GO 0340
02F6 A380 I=0380
02F8 FE33 MI=VE(3DD)
02FA F265 V0:V2=MI
02FC F029 I=V0(LSDP)
02FE 6810 V8=10
0300 6902 V9=02
0302 D895 SHOW 5MI@V8V9
0304 F129 I=V1(LSDP)
0306 7806 V8+06
0308 D895 SHOW 5MI@V8V9
030A F229 I=V2(LSDP)
030C 7806 V8+06
030E D895 SHOW 5MI@V8V9
0310 00EE RET
0312 A322 I=0322
0314 D894 SHOW 4MI@V8V9
0316 00EE RET
0318 71FF V1+FF
031A 3100 SKIP;V1 EQ 00
031C 1318 GO 0318
031E 00EE RET
0320 0180
0322 F0F0
0324 F0F0
0326 7C7C
0328 FE7C
032A 7C70
032C 7C38
032E 7F7F
0330 7C7C
0332 7C7C
0334 7C38
0336 3838
0338 3838
033A 3EE0
033C 8000
033E D4D4
0340 D891 SHOW 1MI@V8V9
0342 12AE GO 02AE

```

13. VIP Biorhythm

The theory of Biorhythm states that there are three predominant cycles that can influence human behavior. These include a 23-day physical cycle, a 28-day emotional cycle, and a 33-day intellectual cycle. All three cycles start at birth and continue throughout life.

Each cycle consists of a positive and a negative period. Physical, emotional, and intellectual aspects are enhanced during positive periods. Poor performance is indicated by the negative period of a cycle.

A critical day occurs on the crossover from the positive to negative period or vice versa. A critical day indicates instability in a particular aspect.

How To Use VIP Biorhythm

1. Load the CHIP-8 interpreter at 0000-01FF and Biorhythm starting at 0200.

2. Turn RUN switch on.

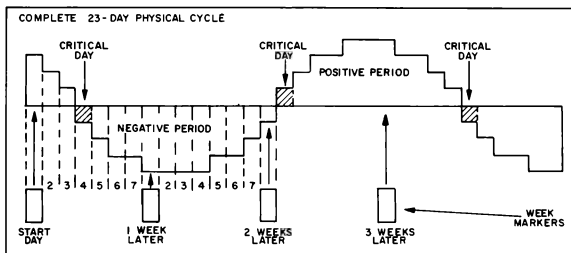
3. Enter birthdate using 2-digit month, 2-digit day, and 4-digit year.

4. Enter start date using 2-digit month, 2-digit day, and 4-digit year. The start date indicates the first day of the 32-day Biorhythm chart the program will generate.

5. After a period of calculation proportional to the span of time involved, the three cycle curves will be shown for a 32-day period. Each horizontal bit position represents one day in the cycle. The start day, on the left, and every seventh day are indicated by week markers. The first day of a positive or negative period is a critical day.

6. To advance the start date hold key F down until the desired date is reached. To decrement the start date hold key B down. These functions allow changing the start date slightly without reentering all the dates and waiting for the calculations to be performed.

7. Press key 0 to clear the screen and enter a new set of dates.



92CM-31180

INTERPRETATION

	Physical	Emotional	Intellectual
Positive Period (Up)	strong, vigorous	good moods, cooperative	good judgment, sharp mentally
Negative Period (Down)	tire easily, less stamina	low enthusiasm, feelings subdued	low attentiveness and concentration
Critical Days (Crossover)	susceptible to injury or illness, low endurance	emotionally unstable, upset easily	poor memory, prone to mistakes

```

0200 A584 I=0584
0202 6100 V1=00
0204 6219 V2=19
0206 D125 SHOW 5MI@V1V2
0208 A588 I=0588
020A 620D V2=0D
020C D125 SHOW 5MI@V1V2
020E A441 I=0441
0210 6201 V2=01
0212 D125 SHOW 5MI@V1V2
0214 A513 I=0513
0216 6131 V1=31
0218 620E V2=0E
021A D124 SHOW 4MI@V1V2
021C A444 I=0444
021E 6209 V2=09
0220 61FF V1=FF
0222 7107 V1+07
0224 D122 SHOW 2MI@V1V2
0226 3122 SKIP;V1 EQ 22
0228 1222 GO 0222
022A 3209 SKIP;V2 EQ 09
022C 1232 GO 0232
022E 6215 V2=15
0230 1220 GO 0220
0232 6300 V3=00
0234 6500 V5=00
0236 6600 V6=00
0238 2500 DO 0500
023A 2518 DO 0518
023C 6000 V0=00
023E 4400 SKIP;V4 NE 00
0240 1248 GO 0248
0242 700A V0+0A
0244 74FF V4+FF
0246 123E GO 023E
0248 A608 I=0608
024A F055 MI=V0:V0
024C 2500 DO 0500
024E 2518 DO 0518
0250 A608 I=0608
0252 F065 V0:V0=MI
0254 8044 V0=V0+V4
0256 A600 I=0600
0258 F31E I=I+V3
025A F055 MI=V0:V0
025C 7301 V3+01
025E 3308 SKIP;V3 EQ 08
0260 1238 GO 0238
0262 A600 I=0600
0264 F765 V0:V7=MI
0266 4000 SKIP;V0 NE 00
0268 12B2 GO 02B2
026A 4100 SKIP;V1 NE 00
026C 12B2 GO 02B2
026E 4400 SKIP;V4 NE 00
0270 12B2 GO 02B2
0272 4500 SKIP;V5 NE 00
0274 12B2 GO 02B2
0276 680C V8=0C
0278 8805 V8=V8-V0
027A 4F00 SKIP;VF NE 00
027C 12B2 GO 02B2
027E 680C V8=0C
0280 8845 V8=V8-V4
0282 4F00 SKIP;VF NE 00
0284 12B2 GO 02B2
0286 8860 V8=V6
0288 8825 V8=V8-V2
028A 4F00 SKIP;VF NE 00
028C 12B2 GO 02B2
028E 5620 SKIP;V6 EQ V2
0290 12B8 GO 02B8
0292 8870 V8=V7
0294 8835 V8=V8-V3
0296 4F00 SKIP;VF NE 00
0298 12B2 GO 02B2
029A 5730 SKIP;V7 EQ V3
029C 12B8 GO 02B8
029E 8840 V8=V4
02A0 8805 V8=V8-V0
02A2 4F00 SKIP;VF NE 00
02A4 12B2 GO 02B2
02A6 5400 SKIP;V4 EQ V0
02A8 12B8 GO 02B8
02AA 8850 V8=V5
02AC 8815 V8=V8-V1
02AE 3F00 SKIP;VF EQ 00
02B0 12B8 GO 02B8
02B2 F518 TONE=V5
02B4 00E0 ERASE
02B6 1200 GO 0200
02B8 8800 V8=V0
02BA 8910 V9=V1
02BC 8A80 VA=V8
02BE 253C DO 053C
02C0 4800 SKIP;VB NE 00
02C2 12D2 GO 02D2
02C4 3B29 SKIP;VB EQ 29
02C6 12B2 GO 02B2
02C8 8920 V9=V2
02CA 8A30 VA=V3
02CC 2554 DO 0554
02CE 3B03 SKIP;VB EQ 03
02D0 12B2 GO 02B2
02D2 8950 V9=V5
02D4 8A40 VA=V4
02D6 253C DO 053C
02D8 4B00 SKIP;VB NE 00
02DA 12EA GO 02EA

```

02DC	3B29	SKIP;VB	EQ	29	034A	0714	
02DE	12B2	GO	02B2		034C	1BD4	
02E0	8960	V9=V6			034E	2448	DO 0448
02E2	8A70	VA=V7			0350	A600	I=0600
02E4	2554	DO	0554		0352	F765	V0:V7=MI
02E6	3B03	SKIP;VB	EQ	03	0354	75FF	V5+FF
02E8	12B2	GO	02B2		0356	3500	SKIP;V5 EQ 00
02EA	6C00	VC=00			0358	137C	GO 037C
02EC	6D00	VD=00			035A	74FF	V4+FF
02EE	6E00	VE=00			035C	3400	SKIP;V4 EQ 00
02F0	24F2	DO	04F2		035E	1370	GO 0370
02F2	8050	V0=V5			0360	640C	V4=0C
02F4	39AA	SKIP;V9	EQ	AA	0362	77FF	V7+FF
02F6	12FE	GO	02FE		0364	37FF	SKIP;V7 EQ FF
02F8	8015	V0=V0-V1			0366	1370	GO 0370
02FA	24B6	DO	04B6		0368	6763	V7=63
02FC	132A	GO	032A		036A	76FF	V6+FF
02FE	24B6	DO	04B6		036C	46FF	SKIP;V6 NE FF
0300	24DC	DO	04DC		036E	1392	GO 0392
0302	8015	V0=V0-V1			0370	8840	V8=V4
0304	1308	GO	0308		0372	8150	V1=V5
0306	24DC	DO	04DC		0374	8260	V2=V6
0308	24B6	DO	04B6		0376	8370	V3=V7
030A	7801	V8+01			0378	24DC	DO 04DC
030C	380D	SKIP;V8	EQ	0D	037A	8500	V5=V0
030E	131C	GO	031C		037C	7CFF	VC+FF
0310	6801	V8=01			037E	4CFF	SKIP;VC NE FF
0312	7301	V3+01			0380	6C16	VC=16
0314	3364	SKIP;V3	EQ	64	0382	7DFF	VD+FF
0316	131C	GO	031C		0384	4DFF	SKIP;VD NE FF
0318	6300	V3=00			0386	6D1B	VD=1B
031A	7201	V2+01			0388	7EFF	VE+FF
031C	24F2	DO	04F2		038A	4EFF	SKIP;VE NE FF
031E	49AA	SKIP;V9	NE	AA	038C	6E20	VE=20
0320	132A	GO	032A		038E	A600	I=0600
0322	6003	V0=03			0390	F755	MI=V0:V7
0324	80E2	V0=V0&VE			0392	2448	DO 0448
0326	F018	TONE=V0			0394	680B	V8=0B
0328	1306	GO	0306		0396	E8A1	SKIP;V8 NE KEY
032A	246A	DO	046A		0398	1342	GO 0342
032C	680B	V8=0B			039A	680F	V8=0F
032E	E8A1	SKIP;V8	NE	KEY	039C	E8A1	SKIP;V8 NE KEY
0330	1340	GO	0340		039E	1342	GO 0342
0332	680F	V8=0F			03A0	132A	GO 032A
0334	E8A1	SKIP;V8	NE	KEY	03A2	7F00	VF+00
0336	1340	GO	0340		03A4	2448	DO 0448
0338	6800	V8=00			03A6	A600	I=0600
033A	E8A1	SKIP;V8	NE	KEY	03A8	F765	V0:V7=MI
033C	12P2	GO	02B2		03AA	8840	V8=V4
033E	132C	GO	032C		03AC	8260	V2=V6
0340	246A	DO	046A		03AE	8370	V3=V7
0342	480B	SKIP;V8	NE	0B	03B0	24DC	DO 04DC
0344	134E	GO	034E		03B2	9050	SKIP;V0 NE V5
0346	13A4	GO	03A4		03B4	6500	V5=00
0348	0100				03B6	7501	V5+01

03B8 4501 SKIP;V5 NE 01	0426 8080
03BA 7401 V4+01	0428 8000
03BC 3400 SKIP;V4 EQ 00	042A 0000
03BE 13D0 GO 03D0	042C 001F
03C0 6401 V4=01	042E 1C1F
03C2 7701 V7+01	0430 1E1F
03C4 3764 SKIP;V7 EQ 64	0432 1E1F
03C6 13D0 GO 03D0	0434 1F1E
03C8 6700 V7=00	0436 1F1E
03CA 7601 V6+01	0438 1F29
03CC 4664 SKIP;V6 NE 64	043A 2E37
03CE 1392 GO 0392	043C 3C2B
03D0 7C01 VC+01	043E 3035
03D2 7D01 VD+01	0440 3AE0
03D4 7E01 VE+01	0442 A0E0
03D6 24C2 DO 04C2	0444 8080
03D8 138E GO 038E	0446 D4D4
03DA 0107	0448 6500 V5=00
03DC 0E0E	044A 6602 V6=02
03DE 1616	044C 6304 V3=04
03E0 160E	044E A600 I=0600
03E2 0E07	0450 F31E I=I+V3
03E4 0100	0452 F065 V0:V0=MI
03E6 050B	0454 A609 I=0609
03E8 0B12	0456 F033 MI=V0(3DD)
03EA 1212	0458 F265 V0:V2=MI
03EC 120B	045A 8410 V4=V1
03EE 0B05	045C 2518 DO 0518
03F0 00EE	045E 8420 V4=V2
03F2 0107	0460 2518 DO 0518
03F4 0E0E	0462 7301 V3+01
03F6 1616	0464 3308 SKIP;V3 EQ 08
03F8 1616	0466 144E GO 044E
03FA 1616	0468 00EE RET
03FC 0E0E	046A 6420 V4=20
03FE 0701	046C 6506 V5=06
0400 0005	046E 6600 V6=00
0402 0B0B	0470 87C0 V7=VC
0404 1212	0472 A3DA I=03DA
0406 1212	0474 249C DO 049C
0408 1212	0476 3400 SKIP;V4 EQ 00
040A 0B0B	0478 1472 GO 0472
040C 0500	047A 6420 V4=20
040E EE00	047C 6506 V5=06
0410 0000	047E 660C V6=0C
0412 0080	0480 87D0 V7=VD
0414 0000	0482 A3F2 I=03F2
0416 0000	0484 249C DO 049C
0418 8080	0486 3400 SKIP;V4 EQ 00
041A 0000	0488 1482 GO 0482
041C 0000	048A 6420 V4=20
041E 8080	048C 6506 V5=06
0420 8000	048E 6618 V6=18
0422 0000	0490 87E0 V7=VE
0424 0080	0492 A562 I=0562

```
0494 249C DO 049C
0496 3400 SKIP;V4 EQ 00
0498 1492 GO 0492
049A 00EE RET
049C F71E I=I+V7
049E F065 V0:V0=MI
04A0 30EE SKIP;V0 EQ EE
04A2 14A8 GO 04A8
04A4 6700 V7=00
04A6 00EE RET
04A8 A40F I=040F
04AA F01E I=I+V0
04AC D568 SHOW 8MI;V5V6
04AE 74FF V4+FF
04B0 7501 V5+01
04B2 7701 V7+01
04B4 00EE RET
04B6 8C04 VC=VC+V0
04B8 8D04 VD=VD+V0
04BA 8E04 VE=VE+V0
04BC 24C2 DO 04C2
04BE 24C2 DO 04C2
04C0 00EE RET
04C2 6B17 VB=17
04C4 8CB5 VC=VC-VB
04C6 4F00 SKIP;VF NE 00
04C8 7C17 VC+17
04CA 6B1C VB=1C
04CC 8DB5 VD=VD-VB
04CE 4F00 SKIP;VF NE 00
04D0 7D1C VD+1C
04D2 6B21 VB=21
04D4 8EB5 VE=VE-VB
04D6 4F00 SKIP;VF NE 00
04D8 7E21 VE+21
04DA 00EE RET
04DC A42C I=042C
04DE F81E I=I+V8
04E0 F065 V0:V0=MI
04E2 3802 SKIP;V8 EQ 02
04E4 00EE RET
04E6 8920 V9=V2
04E8 8A30 VA=V3
04EA 2554 DO 0554
04EC 4B03 SKIP;VB NE 03
04EE 7001 V0+01
04F0 00EE RET
04F2 69AA V9=AA
04F4 9260 SKIP;V2 NE V6
04F6 5370 SKIP;V3 EQ V7
04F8 6900 V9=00
04FA 5840 SKIP;V8 EQ V4
04FC 6900 V9=00
04FE 00EE RET
0500 6400 V4=00

0502 E4A1 SKIP;V4 NE KEY
0504 150E GO 050E
0506 7401 V4+01
0508 340A SKIP;V4 EQ 0A
050A 1502 GO 0502
050C 1500 GO 0500
050E F40A V4=KEY
0510 00EE RET
0512 010C
0514 1290
0516 60D4
0518 A438 I=0438
051A F51E I=I+V5
051C F165 V0:V1=MI
051E A349 I=0349
0520 F61E I=I+V6
0522 F065 V0:V0=MI
0524 F429 I=V4(LSDP)
0526 D105 SHOW 5MI;V1V0
0528 4503 SKIP;V5 NE 03
052A 7601 V6+01
052C 4507 SKIP;V5 NE 07
052E 7601 V6+01
0530 7501 V5+01
0532 4508 SKIP;V5 NE 08
0534 6500 V5=00
0536 00EE RET
0538 416A SKIP;V1 NE 6A
053A 7E51 VE+51
053C 6B00 VB=00
053E A42C I=042C
0540 FA1E I=I+VA
0542 F065 V0:V0=MI
0544 8095 V0=V0-V9
0546 4F01 SKIP;VF NE 01
0548 00EE RET
054A 6B29 VB=29
054C 491D SKIP;V9 NE 1D
054E 3A02 SKIP;VA EQ 02
0550 6B39 VB=39
0552 00EE RET
0554 4A00 SKIP;VA NE 00
0556 8A90 VA=V9
0558 6B03 VB=03
055A 8AB2 VA=VA*VB
055C 3A00 SKIP;VA EQ 00
055E 6B00 VB=00
0560 00EE RET
0562 0107
0564 070E
0566 0E16
0568 1616
056A 1616
056C 160E
056E 0E07
```

0570 0701
0572 0005
0574 050B
0576 0B12
0578 1212
057A 1212
057C 1212
057E 0B0B

0580 0505
0582 00EE
0584 E040
0586 4040
0588 E080
058A E080
058C E0D4

14. VIP Programmable Spacefighters

Programmable Spacefighters is a combat game involving 2 to 8 spaceships competing for the domination of a contained field in space. The field of play is a two-dimensional representation of the surface of an oblong spheroid.

The movement and fire of each spacefighter is controlled by programming a series of commands into each fighter's instruction storage table. Once all the spacefighters are programmed they carry out their commands by sequentially executing a single step at a time. The play of the game is divided into rounds. Each spacefighter may execute between 1 and 15 commands per round.

The fighters all have the same appearance and capabilities. Players distinguish between fighters by examining the defense strength and position of their fighter at the beginning of every round.

Each fighter may face in any of 8 directions. All firing and forward movement occurs in the direction a fighter is currently facing. As a spacefighter crosses outside the two-dimensional field of play it wraps around and re-enters on the opposite side of the field. Laser bursts terminate when they travel outside the field or hit a target.

Each round consists of a selected number of steps. Each step is executed in 2 parts. During the first part, every spacefighter wishing to fire may execute a fire operation. The defense strength of any fighter which is hit by a laser burst is reduced by 1 and a small flash appears.

After all fighters have had an opportunity to execute fire instructions, the movement part of the step begins. Any fighter which has had its defense strength reduced to 0 is destroyed and a longer flash appears. The defense strength is changed to a special code so that the fighter will no longer be programmable or take part in the execution phase. The destroyed fighter will still be open to examination during the Defense/Position Check phase. Fighters having a defense strength greater than 0 may execute a movement command if there is one. Breaking each step into 2 such parts removes any strategic advantage to moving first.

The nature of the game, in that there are variable parameters and no fixed victory conditions, allows the players a lot of freedom. Two to eight players can command single fighters. Four or less players can each command multiple fighters. Two fleets could compete to destroy their opponents' flagship first. Handicaps can be implemented through an imbalance of fighters in different fleets. An odd number of players can play in a free-for-all or team

game. In a non-combat approach, a full complement of spacefighters could be programmed to perform in kaleidoscopic or other type formations.

How To Play VIP Programmable Spacefighters

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.

2. Turn RUN switch on.

3. Initialization of Game.

Various parameters are entered at the start of the game to determine the number of spacefighters and other aspects of play.

S: Enter number of spacefighters. 1 to 8 spacefighters may be used. The program will adjust invalid entries to the nearest valid number.

D: Enter defense strength. A spacefighter may be hit from 1 to F times by laser fire before being destroyed.

E: Enter number of command entries. A spacefighter may be programmed with 1 to F commands during the programming phase of each round.

C: Enter clock duration/no clock. A timer clock 1 to F phorsecs in duration may be selected. Each phorsec equals 4 seconds. The clock is not enabled if a 0 is entered. The clock time is the time allowed for each fighter to be set up.

F: Enter fire power available. A spacefighter may be allowed to fire 1 to F laser bursts per round.

A: Enter accumulation/no accumulation. A spacefighter may be allowed to accumulate all unused laser bursts by entering 1 to F. Accumulation is not allowed if a 0 is entered.

4. Presentation of Field and Spacefighters.

The two-dimensional representation of the playing field consists of 10 vertical by 15 horizontal positions indicated by grid markings around the perimeter. The spacefighters will be in their initial positions.

5. Defense/Position Check.

Enter number of spacefighter to be examined.

S: Current spacefighter being examined.

D: Defense strength of current spacefighter.

Enter 0 to end defense/position check phase.

6. Program Spacefighters.

Surviving spacefighters are programmed in ascending order. Enter 0 to begin programming first spacefighter. Defense strength and position are shown during programming.

E: Indicates number of entries left after current command.

C: Indicates time remaining to program current fighter if clock was selected.

COMMAND	FUNCTION	S: 1 or 2 D: 1 E: F C: 0 F: F A: 0
1	ROTATE 45° CCW, MOVE FWD	
2	MOVE FWD	
3	ROTATE 45° CW, MOVE FWD	
4	ROTATE 45° CCW	
5	FIRE	
6	ROTATE 45° CW	
B	ERASE ALL COMANDS AND REPROGRAM CURRENT SPACEFIGHTER	
E	END PROGRAMMING OF CURRENT SPACEFIGHTER	
7-A,C,D,F	REST, NO OPERATION	
0	REST; BEGIN PROGRAM- MING NEXT SPACEFIGHTER	

ENTER 0 TO BEGIN PROGRAMMING EACH
SUCCESSIVE SPACEFIGHTER.

7. Execute Commands

Enter 0 after all spacefighters are programmed to start execution of commands.

8. The recommended starting point when trying the game out is with 1 or 2 spacefighters, any defense, F (1510) entries per round, no clock, F(1510) fire power and any accumulation:

Use the above to try out the movement and fire execution of the fighters. Try performing loops, figure 8's, tight turns, maximum fire coverage techniques, etc. Start out simple when first playing the game against an opponent. Eight spacefighters can get very complicated.

9. Changing different parameters creates very different effects on the play of the game. The main effect of a large number of fighters is a more complicated game. A large number of entries per round results in a more lively game involving farsighted planning. Fewer entries involves more thinking and reacting to immediate developments but is not without strategy when there are multiple fighters opposing each other. The clock provides pressure which can be greatly increased by the moves-to-time ratio. More fire power produces a more violent game while less fire power increases the importance of movement and positioning. Accumulation of fire power can have long range effects if there is low fire power and a large number of moves per round.

```
0200 611E V1=1E
0202 620E V2=0E
0204 A5D5 I=05D5
0206 D123 SHOW 3MV1V2
0208 6500 V5=00
020A 2570 DO 0570
020C 7501 V5+01
020E 3506 SKIP;V5 EQ 06
0210 120A GO 020A
0212 A5FB I=05FB
0214 F565 V0:V5=MI
0216 4400 SKIP;V4 NE 00
0218 6401 V4=01
021A 4200 SKIP;V2 NE 00
021C 6201 V2=01
021E 4100 SKIP;V1 NE 00
0220 6101 V1=01
0222 4000 SKIP;V0 NE 00
0224 6001 V0=01
0226 6608 V6=08
0228 8602 V6=V6&V0
022A 3600 SKIP;V6 EQ 00
022C 6008 V0=08
022E 8610 V6=V1
0230 8150 V1=V5
0232 A5FB I=05FB
0234 F455 MI=V0:V4
0236 8360 V3=V6
0238 6400 V4=00
023A 00E0 ERASE
023C 6E00 VE=00
023E 8BE0 VB=VE
0240 6A03 VA=03
0242 A5A5 I=05A5
0244 255E DO 055E
0246 F265 V0:V2=MI
0248 6A05 VA=05
024A A600 I=0600
024C 255E DO 055E
024E F455 MI=V0:V4
0250 2564 DO 0564
0252 7E01 VE+01
0254 A5FB I=05FB
0256 F065 V0:V0=MI
0258 50E0 SKIP;V0 EQ VE
025A 123E GO 023E
025C A5BD I=05BD
025E 653E V5=3E
0260 6601 V6=01
0262 D56D SHOW DMV5V6
0264 6610 V6=10
0266 D56D SHOW DMV5V6
0268 661F V6=1F
026A 75F7 V5+F7
026C D561 SHOW 1MV5V6
026E 3511 SKIP;V5 EQ 11
0270 126A GO 026A
0272 6500 V5=00
0274 6100 V1=00
0276 6208 V2=08
0278 2592 DO 0592
027A 7501 V5+01
027C 7206 V2+06
027E 3503 SKIP;V5 EQ 03
0280 1278 GO 0278
0282 A5FE I=05FE
0284 F065 V0:V0=MI
0286 1470 GO 0470
0288 2592 DO 0592
028A 6104 V1=04
028C 7201 V2+01
028E A5D5 I=05D5
0290 D123 SHOW 3MV1V2
0292 72FA V2+FA
0294 3203 SKIP;V2 EQ 03
0296 1290 GO 0290
0298 6000 V0=00
029A 12A6 GO 02A6
029C 2538 DO 0538
029E F065 V0:V0=MI
02A0 2540 DO 0540
02A2 A5A4 I=05A4
02A4 F065 V0:V0=MI
02A6 70C1 V0+01
02A8 4064 SKIP;V0 NE 64
02AA 6000 V0=00
02AC 2538 DO 0538
02AE F055 MI=V0:V0
02B0 2540 DO 0540
02B2 FE0A VE=KEY
02B4 4E00 SKIP;VE NE 00
02B6 12D0 GO 02D0
02B8 7EFF VE+FF
02BA 6608 V6=08
02BC 86E2 V6=V6&VE
02BE 3600 SKIP;V6 EQ 00
02C0 6E07 VE=07
02C2 252C DO 052C
02C4 2518 DO 0518
02C6 2506 DO 0506
02C8 4710 SKIP;V7 NE 10
02CA 12C6 GO 02C6
02CC 2518 DO 0518
02CE 12B2 GO 02B2
02D0 A5F5 I=05F5
02D2 F965 V0:V9=MI
02D4 252C DO 052C
02D6 43F0 SKIP;V3 NE F0
02D8 1362 GO 0362
02DA FA0A VA=KEY
```

```

0494 8204 V2=V2+V0
0496 6001 V0=01
0498 F01E I=I+V0
049A F065 V0:V0=MI
049C 8104 V1=V1+V0
049E 6F00 VF=00
04A0 310E SKIP;V1 EQ 0E
04A2 14A8 GO 04A8
04A4 613B V1=3B
04A6 6FFF VF=FF
04A8 313E SKIP;V1 EQ 3E
04AA 14B0 GO 04B0
04AC 6111 V1=11
04AE 6FFF VF=FF
04B0 32FD SKIP;V2 EQ FD
04B2 14B8 GO 04B8
04B4 621B V2=1B
04B6 6FFF VF=FF
04B8 321E SKIP;V2 EQ 1E
04BA 00EE RET
04BC 6200 V2=00
04BE 14B6 GO 04B6
04C0 252C DO 052C
04C2 8600 V6=V0
04C4 2564 DO 0564
04C6 8060 V0=V6
04C8 4504 SKIP;V5 NE 04
04CA 70FE V0+FE
04CC 7001 V0+01
04CE 6607 V6=07
04D0 8062 V0=V0&V6
04D2 8BE0 VB=VE
04D4 6A05 VA=05
04D6 A600 I=0600
04D8 255E DO 055E
04DA F455 MI=V0:V4
04DC 00EE RET
04DE 68F0 V8=F0
04E0 F815 TIME=V8
04E2 00EE RET
04E4 6507 V5=07
04E6 6614 V6=14
04E8 FD29 I=VD(LSDP)
04EA D565 SHOW 5MV5V6
04EC A5FE I=05FE
04EE F065 V0:V0=MI
04F0 4000 SKIP;V0 NE 00
04F2 00EE RET
04F4 661A V6=1A
04F6 F929 I=V9(LSDP)
04F8 D565 SHOW 5MV5V6
04FA 00EE RET
04FC 8BE0 VB=VE
04FE 6A0F VA=0F
0500 A628 I=0628
0502 255E DO 055E
0504 00EE RET
0506 2564 DO 0564
0508 6700 V7=00
050A E7A1 SKIP;V7 NE KEY
050C 1514 GO 0514
050E 7701 V7+01
0510 3710 SKIP;V7 EQ 10
0512 150A GO 050A
0514 2564 DO 0564
0516 00EE RET
0518 7E01 VE+01
051A 6507 V5=07
051C 6608 V6=08
051E FE29 I=VE(LSDP)
0520 DE65 SHOW 5MV5V6
0522 660E V6=0E
0524 F329 I=V3(LSDP)
0526 D565 SHOW 5MV5V6
0528 7EFF VE+FF
052A 00EE RET
052C 8BE0 VB=VE
052E 6A05 VA=05
0530 A600 I=0600
0532 255E DO 055E
0534 F465 V0:V4=MI
0536 00EE RET
0538 A5A4 I=05A4
053A 6500 V5=00
053C 6601 V6=01
053E 00EE RET
0540 A630 I=0630
0542 F033 MI=V0(3DD)
0544 F265 V0:V2=MI
0546 F129 I=V1(LSDP)
0548 D565 SHOW 5MV5V6
054A F229 I=V2(LSDP)
054C 7505 V5+05
054E D565 SHOW 5MV5V6
0550 00EE RET
0552 6C00 VC=00
0554 4A00 SKIP;VA NE 00
0556 00EE RET
0558 8CB4 VC=VC+VB
055A 7AFF VA+FF
055C 1554 GO 0554
055E 2552 DO 0552
0560 FC1E I=I+VC
0562 00EE RET
0564 6A03 VA=03
0566 8B00 VB=V0
0568 A5C8 I=05C8
056A 255E DO 055E
056C D123 SHOW 3MV1V2
056E 00EE RET

```

0570 620D V2=0D	05B6 0000
0572 611A V1=1A	05B8 351B
0574 2592 D0 0592	05BA 0417
0576 6121 V1=21	05BC 0049
0578 259E D0 059E	05BE 0000
057A A5FB I=05FB	05C0 4000
057C F51E I=I+V5	05C2 0040
057E F055 MI=V0:V0	05C4 0000
0580 6678 V6=78	05C6 4000
0582 F615 TIME=V6	05C8 0040
0584 F607 V6=TIME	05CA A000
0586 3600 SKIP:V6 EQ 00	05CC C040
0588 1584 GO 0584	05CE 8040
058A 611A V1=1A	05D0 8040
058C 2592 D0 0592	05D2 C000
058E 6121 V1=21	05D4 A040
0590 15A0 GO 05A0	05D6 0040
0592 A5EB I=05EB	05D8 6000
0594 F51E I=I+V5	05DA 2040
0596 F065 V0:V0=MI	05DC 2000
0598 F029 I=V0 (LSDP)	05DE 6040
059A D125 SHOW 5MV1V2	05E0 4040
059C 00EE RET	05E2 2040
059E F30A V3=KEY	05E4 8000
05A0 8030 V0=V3	05E6 E000
05A2 1598 GO 0598	05E8 8040
05A4 0106	05EA 2005
05A6 380F	05EC 0D0E
05A8 0211	05EE 0C0F
05AA 0C00	05F0 0AFD
05AC 291B	05F2 FD00
05AE 0423	05F4 0303
05B0 0000	05F6 0300
05B2 1D1B	05F8 FDFD
05B4 042F	05FA FDD4

15. VIP Lunar Lander

You are descending to the floor of a 250-foot crater. The right side of the TV display shows amount of fuel, feet from the bottom, and fall rate per cycle. Length of fall rate cycle changes from about ¼ second to one second. The fall rate increases by one foot per second/per cycle. The computer will update the display only at the end of each cycle.

The left side of the display shows the Lunar Lander descending from 250 feet. The Lander will first appear at one of sixteen locations. It will then slowly drop down the crater. The crater walls have rock formations protruding from them which must be avoided. If either rocket motor should touch any part of the crater, the Lander will explode in a cloud of smoke, and disintegrate. (Remember, these are atomic thrusters and react like miniature atomic bombs upon impact.)

When you reach 32 feet, the display will change, and you will see the crater floor. You must now land between the rock formations on the floor, and maintain a minimum fall rate. As you drop your fall rate to zero, you soon discover that the Lander becomes more and more unstable just as any hovering object would. And now with perfect skill you guide the ship in for a perfect touch down, or?

How To Play VIP Lunar Lander

1. Load the CHIP-8 interpreter at 0000-01FF and the game starting at 0200.
2. Key 2 controls the thrust of the Lunar Lander. One tone beep equals one pound of fuel and one foot of thrust.
3. Key 4 controls the horizontal stabilizing engine, and moves the Lander one foot to the left per one pound of fuel.
4. Key 6 controls stabilization to the right.
5. Stabilization controls only react after: (a) a complete fall cycle, or (b) after the key 1 thrust control is pressed. You must be aware of this at all times or you will crash even though either key 4 or 6 is pressed.
6. At the end of each cycle, the Lunar Lander will move randomly at the rate of one foot either right or left. Therefore, as the fall rate approaches zero, the Lander becomes more uncontrollable, and your horizontal stabilizers react more quickly. (Just like the real thing.)
7. If you land too fast, the Lander will bounce and flip over.
8. If you run out of fuel, the Lander will crash.

9. You will not be allowed to go above 250 feet. If you try to do so you will just waste fuel.

10. Once you reach 32 feet and move into the landing display, you will not be allowed to rise above 26 feet. Trying to do so will waste fuel.

11. Game Options

You may select one of three options at the beginning of the game.

Option: 1—You start at 250 feet. You are given 150 pounds of fuel. You must land at 5 feet per second or less. The initial descent display is easy to maneuver through.

Option: 2—You start at 250 feet. You have 200 pounds of fuel. You must land at 3 feet per second or less. The initial descent display is hard to maneuver through.

Option: 3—You start at 32 feet. You have 100 pounds of fuel. You must land at 3 feet per second or less. This display allows you to practice landing. You should consider Option: 2 as the complete game when trying for Astronaut Ratings.

12. Astronaut Ratings

The computer will award you with ratings depending on how good a lander you are:

You will obtain the rating of Astronaut by landing without regard to fall rate or fuel. You must not exceed fall rate, or zero fuel.

You will obtain the rating of Astronaut Pilot, by landing with regard to fuel. 80 pounds or more if you land between the two rock formations on the floor, and 50 pounds or more if you land between the crater wall and a rock formation.

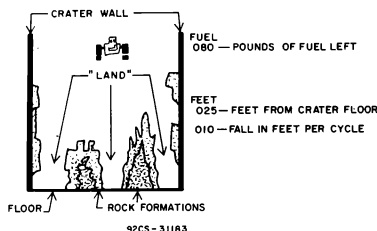
You will obtain the rating of Astronaut Captain by landing the ship with regard to fuel as per above, and if the fall rate is two feet per second or less. (Not an easy task, as you will soon discover.)

13. About Graphics

This game has some interesting graphic displays when you run out of fuel, crash, land too fast, when you land successfully. I will leave them to your discovery, as they are fun to watch.

14. Landing Sites

The final landing display will appear somewhat like the illustration below. You may land in any of the three locations pointed to. To land between the crater walls and the rock formations, you will have to first bring the Lander to a zero fall rate while hovering in the center landing area. Then bring the ship up and just over the rock formation, and then let it drop down to the landing site. At the last moment, a few



taps on the thruster button will slow the Lander to the required fall rate. It will take you many tries to land here, but don't give up, it can be done!!

NOTE: VIP Lunar Lander requires at least 3K of RAM. RAM memories are available to increase your VIP from 2K to 3K at your local computer store or by contacting:

RCA VIP Marketing
New Holland Avenue
Lancaster, PA 17604

```

0200 1202 6330 F315 A414 6105 6200 256C A438:
0210 6108 6212 2568 A456 6100 621A 2542 2542:
0220 1798 0000 0000 A4E1 6100 6200 D121 7201:
0230 321F 122C 612E 6200 D121 7201 321F 1238:
0240 15B6 A4D1 6100 6200 D125 A570 FA33 F265:
0250 6331 6406 2258 00EE F029 D345 7305 F129:
0260 D345 7305 F229 D345 00EE 0000 A4D6 6118:
0270 6200 D125 A573 FB33 F265 6331 6413 2258:
0280 00EE 0000 A4CC 6130 6200 D125 A576 FC33:
0290 F265 6331 641A 2258 00EE 0000 6BFA 6BFA:
02A0 A570 F265 6331 6406 2258 00EE A573 F265:
02B0 6331 6413 2258 00EE A576 F265 6331 641A:
02C0 2258 00EE 0000 0000 6602 C70F 6800 7708:
02D0 6E02 6302 E3A1 23D2 6304 E3A1 257C 6306:
02E0 E3A1 236E 12E6 7C01 8E00 7BFF 4B00 165E:
02F0 4B1A 2394 7EFF 7801 23EA 3E00 12EA C001:

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0300 3000 1308 7701 130A 77FF 22A0 22A0 22A0:
0310 2274 23EA 22B8 228C 12D0 0000 6302 E3A1:
0320 13D2 00EE 6300 6A96 6BFA 6C04 A346 6130:
0330 6200 252E A355 6130 6200 252E 224A 2274:
0340 228C 12C8 0000 EA8A EA8A 8EE8 88E8 88EE:
0350 0000 0000 00EE 88EE 888E EE84 E484 E400:
0360 0000 0000 7AFF 3A00 13D6 1854 0000 F618:
0370 7701 7AFF 4A00 1854 23EA 6306 E3A1 136E:
0380 00EE 77FF C0F8 FEFF E080 A384 6101 620C:
0390 D136 00EE 25BE A4E2 6100 6201 D12F A4F1:
03A0 720F D12F A500 6126 6201 D12F 720F D12F:
03B0 A51E 6100 6218 D127 A525 611F 6218 D127:
03C0 A4DE 6100 621F D121 7108 3130 13C6 00EE:
03D0 0000 F618 1364 3C00 7CFF 4BFA 13E6 4B1A:
03E0 13E6 7B01 78FF 3E00 7EFF A4DB D785 6F00:
03F0 A4E1 8980 7905 8D70 DD91 4F01 18D4 DD91:

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0400 6F00 7D07 DD91 4F01 17F4 DD91 A4DB D785;
0410 131C 0000 8A8A 8A8A EE8B CABB 9A8A BC84;
0420 BC88 AC47 4547 4575 4564 544C 45EE A8AE;
0430 A8EE F0D0 F0A0 B000 97A4 C7A4 9751 5471;
0440 2521 C341 D901 C1A8 2B3B 2A2A D555 D594;
0450 DDDC 08C8 48C8 97A4 C7A4 9751 5571 2420;
0460 4342 EB42 4383 02BB 8083 BB12 9392 92BD;
0470 959D 95BD 4544 4444 75EE 284E 88EE EF8D;
0480 8F8A EB77 5477 5157 5555 7550 5500 EE8A;
0490 8E8A E8EE A4E4 8484 E8AB E8AA AA20 20A0;
04A0 6020 EEA8 EEA2 AEEF 4D4F 4A4B 7456 5554;
04B0 745D 555D D555 5C48 4848 C806 EEA4 E484;
04C0 8E8E 8A8A 8AEE E040 4040 4000 EE88 EE82;
04D0 8EE8 88E8 888E EE84 E484 8418 3CA5 FFBD;
04E0 0050 4040 4040 4040 6060 6060 6060 6070;
04F0 7060 6060 6060 6070 7060 4040 0000 0000;

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0500 0301 0F0F 0101 0101 0000 0000 0000 0007;
0510 0F0F 0F0F 0F0F 0F0F 0F0F 8F8F 8F8F 28F8;
0520 FC7C 787C 7C10 3030 78F8 F0F8 0000 6300;
0530 6405 D125 7301 F41E 7108 3303 1532 00EE;
0540 0000 6300 6405 D125 7301 F41E 7108 3304;
0550 1546 00EE 0000 6300 6405 D125 7301 F41E;
0560 7108 3305 155A 00EE 252E 152E 252E 1542;
0570 0104 0900 0407 0002 0100 B3BF F618 77FF;
0580 7AFF 4A00 1854 23EA 6304 E3A1 157C 00EE;
0590 5848 A59E 6126 6214 159A D126 00EE 030F;
05A0 FF7F 0701 FF00 A5A4 6109 620F D121 6108;
05B0 6210 D121 1772 2592 238A 25A6 1326 2592;
05C0 238A 25A6 00EE 4747 80FF A8AB A8AE 88FF;
05D0 F080 A080 A0A0 F000 22A0 224A 22AC 2274;
05E0 22B8 228C A76C D786 4701 163A 4702 163A;
05F0 4703 163A 4704 163A 4705 163A 4706 163A;

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0600 4724 1612 4725 1612 4726 1612 6DFF 163A;
0610 0000 6E00 7702 A5C8 D781 78FF 7E01 3E0D;
0620 1618 A5C9 77F4 7801 D787 7708 A5D0 D787;
0630 17FC F888 A888 A8A8 F800 6E00 7702 A5C8;
0640 D781 78FF 7E01 3E0D 1640 A5C9 7701 7801;
0650 D787 7708 A632 D787 3DFF 17FC 1816 6F00;
0660 6605 86C5 3F01 1680 15D8 0000 0000 0000;
0670 0000 BDFE A53C 1838 1078 D8D8 7810 3800;
0680 A677 7702 78FD D788 26A8 168C A677 D788;
0690 A672 77FE 7804 D785 A47E 610C 6200 252E;
06A0 6D02 FD18 1698 25C4 22A0 224A 22AC 2274;
06B0 22B8 228C 00EE 414A AE5D BBBD BEB0 B2B4;
06C0 4C40 484D 4741 4342 B56A 292C E3C4 DF2F;
06D0 1F2F 8820 2748 6E02 26DC 1740 A4DB D786;
06E0 A6C8 D786 78FF FE18 A47E 610C 6200 252E;
06F0 7D01 3D0A 16DE 6D00 00EE A6D2 7702 780D;

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0700 8570 8680 8070 8980 D781 D781 273A 78FF;
0710 7001 75FF 76FE 79FE D782 D782 D092 D092;
0720 D562 D562 7D01 273A A47E 610C 6200 252E;
0730 A6D2 3D05 170E 1738 1756 6E02 FE18 00EE;
0740 780A 26E0 16FA 1742 6D00 F818 26A8 8A70;
0750 8B80 7B05 00EE A47E 610C 6200 252E A76A;
0760 1762 DAB2 6E02 FE18 1756 C0C0 183C A5FF;
0770 BD24 611F 6217 D121 00EE EEA8 AEA8 E8EB;
0780 4A4A 4A4B A2B2 AAA6 A230 9013 9038 7010;
0790 7640 70E0 20E0 20E0 1692 6109 6208 2568;
07A0 F00A 4001 17B0 4002 17CE 4003 17D8 17A0;
07B0 18A0 600B F055 6096 A327 F055 A329 60FA;
07C0 F055 A2CD 6000 F055 17EA 17EC 0000 A5AF;
07D0 600E F055 A661 18AA 18B2 6064 F055 A329;
07E0 6020 F055 A2CD 601A F055 F307 3300 17EA;
07F0 00E0 1226 2748 7A07 16D6 BFB8 6F00 6031;

0800 80A5 3F00 1832 4C00 1842 4C01 1842 4C02;
0810 1842 1836 0000 6F00 604F 80A5 3F00 1832;
0820 1806 0000 A4A2 6103 6200 2556 6E02 FE18;
0830 00EE 2824 1832 2824 A4BC 610B 6206 252E;
0840 1836 2824 A48E 6108 6206 2542 1842 6AA1;
0850 A4DB D785 A677 7702 78FD D788 26A8 A677;
0860 D788 77FE 7803 A672 D785 D785 A346 6130;
0870 6200 252E 6E02 FE18 7BFF 7C01 7801 4B1B;
0880 2394 3B00 1866 26A8 2748 7A03 6E02 26E0;
0890 1740 A673 611B 620F D121 A77A 179A 0000;
08A0 A661 6005 F055 A5AF 17B2 6003 F055 60C8;
08B0 17B8 A661 6003 F055 A327 17DA 76F6 327F;
08C0 0010 1800 FF7E C7FD 8050 35C9 A42E 6780;
08D0 0080 1000 6FFF 7F73 3800 C917 8727 A33F;
08E0 0000 94C8 FFEF FFED C890 FEFC FF27 2930;
08F0 9058 8C12 FF7F 7F77 9180 1FE9 6217 3B2B;

```

16. VIP Blockout

VIP Blockout is a fast action two-player game of skill, strategy, coordination, and excitement!

Two players each using their own keypad control the movement of their respective lines (one solid and one checked).

The object is for each player to maneuver his/her line in such a manner as to avoid collision with another line while at the same time trying to cause the opponent to collide with one. As the play continues, the speed of movement increases demanding faster thought and response.

How To Play VIP Blockout

1. **DO NOT** load the CHIP-8 interpreter! The entire game listing starting at location 0000 is provided. Load game in location 0000 through 048F.

2. Turn RUN switch on.

3. Movement of each player's line is controlled by pressing 2 to move line up, 8 down, 4 left and 6 right.

4. If the program is executed in a normal manner, by flipping the toggle switch to run, the playing field is defined by a border around its perimeter. However, if key 0 on either keypad is pressed while the run switch is flipped, the border is not generated and then the lines can wrap around the screen.

5. A match consists of nine games, the winner getting the most points.

NOTES: 1. This game is programmed in color and has sound effects. It can be used with the VP590 Color board and VP595 Simple Sound board, or it will run on a standard VIP without color and sound enhancement.

2. This game requires a minimum of one VIP expansion keyboard (VP580) or two expansion keyboards for exciting "dual action". Expansion keyboards plug directly into the VP590 color graphics board or into the VP585 expansion keyboard interface. For these and other VIP accessories, contact your local computer store or:

RCA VIP Marketing
New Holland Avenue
Lancaster, PA 17604

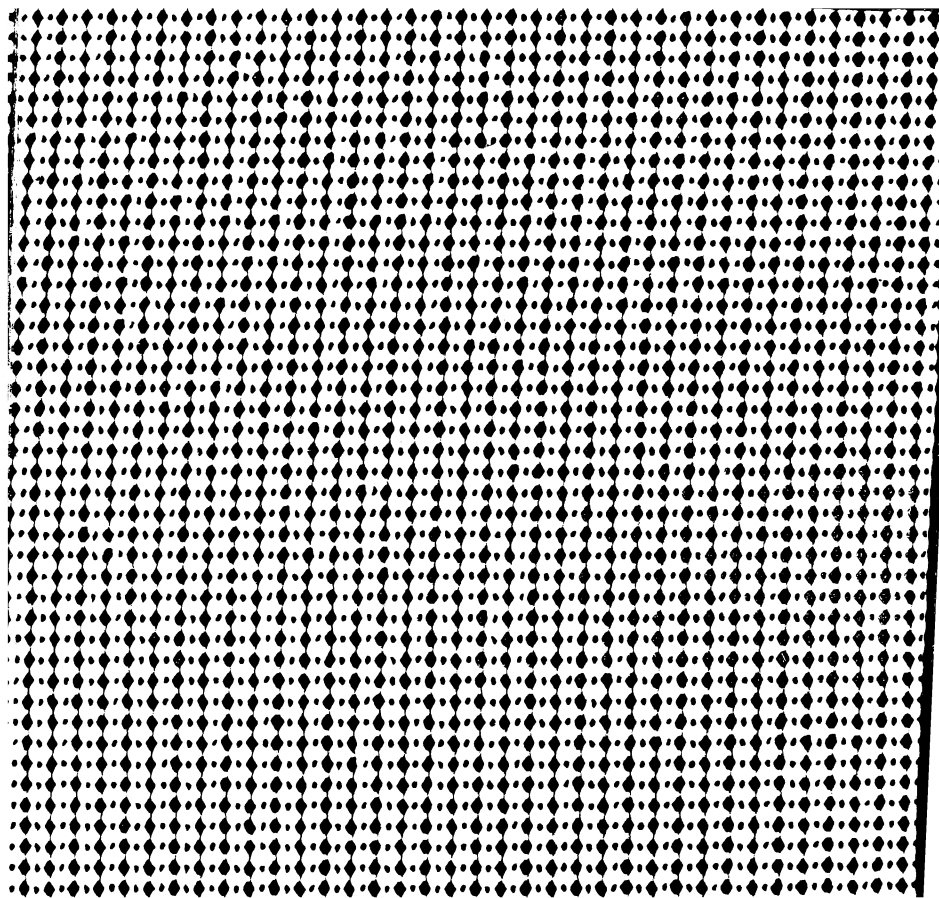
```

0000 91BE FF01 B2B6 F8CF A2F8 81E1 F846 A190:
0010 B4F8 1BA4 F802 B5F8 FAF5 D436 B7E2 94BC:
0020 45AF F6F6 F6F6 3244 F950 AC8F FA0F F9F0:
0030 A605 F6F6 F6F6 F9F0 A74C B38C FC0F AC0C:
0040 A3D3 301B 8FFA 0FB3 4530 4022 6912 D400:
0050 0001 0101 0100 0101 0101 0102 0100 0101:
0060 007C 7583 8EFE B4E7 EC91 EB00 D970 9905:
0070 06FA 07BE 06FA 3FF6 F6F6 2252 07FA 1FFE:
0080 FEFE F1AC 9B8C 45FA 0FAD A7F8 D0A6 93AF:
0090 8732 F327 4ABD 9EAE 8E32 A49D F6BD 8F76:
00A0 AF2E 3093 9D56 168F 5616 308E 00EC F8D0:
00B0 A693 A78D 32D9 06F2 2D32 BEF8 01A7 46F3:
00C0 5C02 FB07 32D2 1C06 F232 CEF8 01A7 06F3:
00D0 5C2C 168C FC08 AC3B B3F8 FFA6 8756 12D4:
00E0 9BBF F8FF AF93 5F8F 32DF 2F30 E500 42B5:
00F0 42A5 D48D A787 32AC 2A27 30F5 0000 05F6:

```

0100	33A4	3095	0045	A398	56D4	F881	BCF8	95AC;
0110	22DC	1256	D406	B8D4	06A8	D464	0A01	E68A;
0120	F4AA	3B28	9AFC	01BA	D4F8	81BA	06FA	0FAA;
0130	0AAA	D4E6	06BF	93BE	F818	AE2A	1AF8	005A;
0140	0EF5	3B4B	560A	FC01	5A30	404E	F63B	3C9F;
0150	562A	2AD4	0022	8652	F8F0	A707	5A87	F317;
0160	1A3A	5B12	D422	8652	F8F0	A70A	5787	F317;
0170	1A3A	6B12	D415	8522	7395	5225	45A5	86FA;
0180	0FB5	D445	E6F3	3A82	1515	D445	E6F3	3A88;
0190	D445	0730	8C45	0730	84E6	6226	45A3	3688;
01A0	D43E	88D4	E606	FA77	5607	FA77	F4FA	7756;
01B0	15D4	0000	4556	D445	E6F4	56D4	45FA	0F3A;
01C0	C407	56D4	AF22	F8D3	738F	F9F0	52E6	07D2;
01D0	56F8	FFA6	F800	7E56	D419	89AE	93BE	99EE;
01E0	F456	76E6	F4B9	5645	F256	D445	AA86	FA0F;
01F0	BAD4	3788	D43F	88D4	E663	D4E6	3FFC	6BD4;
0200	92BD	F89F	AD0D	320A	45D4	0045	FA0F	AF32;
0210	3146	FA3F	F6F6	F622	52E2	06FA	1FFE	FEFE;
0220	F1AC	12F8	D0BC	075C	9CFC	08AC	2F8F	3A26;
0230	D407	BD46	AC06	BC8C	FA07	2252	E2F8	C0BE;
0240	9CF6	F6F6	F6FA	07AD	9CFE	FEFE	FEFE	F4AE;
0250	8CF6	F6F6	F6FA	07AF	9EB7	8EA7	8DBC	F804;
0260	AC9D	5787	FC08	A72C	8C3A	619C	3273	FF01;
0270	BC30	5E1E	8EFA	E7AE	8F32	7E2F	3058	12D4;
0280	32BD	F89F	ADF8	C0BC	94AC	F8AA	5C94	BCAC;
0290	0CFB	9132	9CF8	915C	F801	5DD4	F800	5DD4;
02A0	E265	22D4	0000	0000	0000	0000	0000	0000;
02B0	0000	0000	0000	0000	0000	0000	0000	0000;
02C0	0000	0000	0000	0000	0000	0000	0000	0000;
02D0	0000	0000	0000	0000	0000	0000	0000	0000;
02E0	0000	0000	0000	0000	0000	0000	0000	0000;
02F0	0000	0000	0000	0000	0000	0280	00E0	004B;
0300	6609	6700	1486	6701	A490	6000	6100	F155;
0310	3424	6EFF	2360	2424	6C05	6170	6270	B1C0;
0320	6280	6920	3701	244C	6104	6204	6C08	633A;
0330	641A	6D02	CH01	6500	4A00	2376	4A01	23AE;
0340	3F00	13E6	236A	7501	3502	1338	2350	1336;
0350	F8F8	6E02	FE18	4902	135E	79FF	78FE	8E90;
0360	FE15	FE07	3E00	1362	00EE	3A00	1372	6A01;
0370	00EE	6A00	00EE	6B02	EBR1	1384	7B02	3B0A;
0380	1378	8BC0	8CB0	4B02	1398	4B04	139E	4B06;
0390	13A4	7100	7202	13A8	7100	72FE	13A8	71FE;
03A0	7200	13A8	7102	7200	A481	D122	00EE	6B02;
03B0	EBF5	13BC	7B02	3B0A	13B0	8BD0	8DB0	4B02;
03C0	13D0	4B04	13D6	4B06	13DC	7300	7402	13E0;
03D0	7300	74FE	13E0	73FE	7400	13E0	7302	7400;
03E0	A483	D342	00EE	6EFF	FE15	FE18	4A00	D122;
03F0	4A01	D342	FE07	3E00	13EC	A490	F165	A490;

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0400 3A00 7001 3A01 7101 F155 00E0 2424 76FF;
0410 3600 1312 6E02 FE18 6E04 FE15 FE07 3E00;
0420 141C 1414 6C04 6130 6220 B1C0 6C06 6134;
0430 6220 B1C0 A490 6110 6200 2444 A491 6128;
0440 2444 00EE F065 F029 D125 00EE A483 6100;
0450 6200 D121 3F00 D121 62FF D121 7101 3F01;
0460 1450 71FF D121 6201 6100 D121 3F00 D121;
0470 61FF D121 7201 3F01 1468 72FF D121 00EE;
0480 01C0 C080 40D4 E7A1 1306 E7F5 1306 1308;
0490 0000 0000 0000 0000 0000 0000 0000 0000;
04A0 0000 0000 0000 0000 0000 0000 0000 0000;
04B0 0000 0000 0000 0000 0000 0000 0000 0000;
04C0 0000 0000 0000 0000 0000 0000 0000 0000;
04D0 0000 0000 0000 0000 0000 0000 0000 0000;
04E0 0000 0000 0000 0000 0000 0000 0000 0000;
04F0 0000 0000 0000 0000 0000 0000 0000 0000
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02DC 2518 DO 0518
02DE A5FD I=05FD
02E0 F065 V0:V0=MI
02E2 8D00 VD=V0
02E4 24FC DO 04FC
02E6 6800 V8=00
02E8 600E V0=0E
02EA F055 MI=V0:V0
02EC 7801 V8+01
02EE 380F SKIP;V8 EQ 0F
02F0 12EA GO 02EA
02F2 24DE DO 04DE
02F4 7DFF VD+FF
02F6 24E4 DO 04E4
02F8 252C DO 052C
02FA 2506 DO 0506
02FC 3710 SKIP;V7 EQ 10
02FE F70A V7=KEY
0300 A5FE I=05FE
0302 F065 V0:V0=MI
0304 4000 SKIP;V0 NE 00
0306 131A GO 031A
0308 F807 V8=TIME
030A 3800 SKIP;V8 EQ 00
030C 131A GO 031A
030E 24E4 DO 04E4
0310 79FF V9+FF
0312 24DE DO 04DE
0314 4900 SKIP;V9 NE 00
0316 133C GO 033C
0318 24E4 DO 04E4
031A 4710 SKIP;V7 NE 10
031C 12F8 GO 02F8
031E 3708 SKIP;V7 EQ 0B
0320 1326 GO 0326
0322 24E4 DO 04E4
0324 12DE GO 02DE
0326 370E SKIP;V7 EQ 0E
0328 132E GO 032E
032A 24E4 DO 04E4
032C 133C GO 033C
032E 24FC DO 04FC
0330 FD1E I=I+VD
0332 8070 V0=V7
0334 F055 MI=V0:V0
0336 24E4 DO 04E4
0338 3D00 SKIP;VD EQ 00
033A 12F4 GO 02F4
033C 252C DO 052C
033E 2518 DO 0518
0340 A5FC I=05FC
0342 F065 V0:V0=MI
0344 8600 V6=V0
0346 A5FA I=05FA
0348 F565 V0:V5=MI
034A 252C DO 052C
034C 4600 SKIP;V6 NE 00
034E 1356 GO 0356
0350 8544 V5=V5+V4
0352 4F01 SKIP;V5 NE 01
0354 65FF V5=FF
0356 8450 V4=V5
0358 6A05 VA=05
035A A600 I=0600
035C 24D8 DO 04D8
035E EA9E SKIP;VA EQ KEY
0360 135E GO 035E
0362 A5FB I=05FB
0364 F065 V0:V0=MI
0366 7E01 VE+01
0368 50E0 SKIP;V0 EQ VE
036A 12D0 GO 02D0
036C A5F0 I=05F0
036E FD65 V0:VD=MI
0370 7DFF VD+FF
0372 6E00 VE=00
0374 252C DO 052C
0376 43F0 SKIP;V3 NE F0
0378 1384 GO 0384
037A 24FC DO 04FC
037C FD1E I=I+VD
037E F065 V0:V0=MI
0380 4005 SKIP;V0 NE 05
0382 1412 GO 0412
0384 7E01 VE+01
0386 A5FB I=05FB
0388 F065 V0:V0=MI
038A 50E0 SKIP;V0 EQ VE
038C 1374 GO 0374
038E 6E00 VE=00
0390 6900 V9=00
0392 252C DO 052C
0394 4300 SKIP;V3 NE 00
0396 1406 GO 0406
0398 43F0 SKIP;V3 NE F0
039A 13BA GO 03BA
039C 24FC DO 04FC
039E FD1E I=I+VD
03A0 F065 V0:V0=MI
03A2 300E SKIP;V0 EQ 0E
03A4 69FF V9=FF
03A6 4002 SKIP;V0 NE 02
03A8 13E4 GO 03E4
03AA 4001 SKIP;V0 NE 01
03AC 13D6 GO 03D6
03AE 4003 SKIP;V0 NE 03
03B0 13D6 GO 03D6
03B2 4004 SKIP;V0 NE 04
03B4 13DE GO 03DE
03B6 4006 SKIP;V0 NE 06

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03B8 13DE GO 03DE
03BA 7E01 VE+01
03BC A5FB I=05FB
03BE F065 V0:V0=MI
03C0 6C00 VC=00
03C2 FC15 TIME=VC
03C4 FC07 VC=TIME
03C6 3C00 SKIP;VC EQ 00
03C8 13C4 GO 03C4
03CA 5E00 SKIP;VE EQ V0
03CC 1392 GO 0392
03CE 3900 SKIP;V9 EQ 00
03D0 4D00 SKIP;VD NE 00
03D2 129C GO 029C
03D4 1370 GO 0370
03D6 7003 V0+03
03D8 8500 V5=V0
03DA 24C0 DO 04C0
03DC 13E8 GO 03E8
03DE 8500 V5=V0
03E0 24C0 DO 04C0
03E2 13FC GO 03FC
03E4 252C DO 052C
03E6 2564 DO 0564
03E8 8600 V6=V0
03EA 248E DO 048E
03EC A5C8 I=05C8
03EE 6F00 VF=00
03F0 D122 SHOW 2MV1V2
03F2 4F01 SKIP;VF NE 01
03F4 1400 GO 0400
03F6 8060 V0=V6
03F8 D122 SHOW 2MV1V2
03FA 24D2 DO 04D2
03FC 2564 DO 0564
03FE 13BA GO 03BA
0400 D122 SHOW 2MV1V2
0402 252C DO 052C
0404 13FC GO 03FC
0406 63F0 V3=F0
0408 24D2 DO 04D2
040A 2478 DO 0478
040C 2564 DO 0564
040E 2478 DO 0478
0410 13BA GO 03BA
0412 252C DO 052C
0414 4400 SKIP;V4 NE 00
0416 1384 GO 0384
0418 74FF V4+FF
041A 24D2 DO 04D2
041C 8700 V7=V0
041E 248E DO 048E
0420 4FFF SKIP;VF NE FF
0422 1384 GO 0384
0424 6603 V6=03
0426 8B70 VB=V7
0428 8B62 VB=VB&V6
042A 6A03 VA=03
042C A5DF I=05DF
042E 255E DO 055E
0430 6F02 VF=02
0432 FF18 TONE=VF
0434 D123 SHOW 3MV1V2
0436 8CF0 VC=VF
0438 D123 SHOW 3MV1V2
043A 8070 V0=V7
043C 3C01 SKIP;VC EQ 01
043E 141E GO 041E
0440 8510 V5=V1
0442 8620 V6=V2
0444 6800 VB=00
0446 9BE0 SKIP;VB NE VE
0448 1464 GO 0464
044A 252E DO 052E
044C 43F0 SKIP;V3 NE F0
044E 1464 GO 0464
0450 5150 SKIP;V1 EQ V5
0452 1464 GO 0464
0454 5260 SKIP;V2 EQ V6
0456 1464 GO 0464
0458 3300 SKIP;V3 EQ 00
045A 73FF V3+FF
045C 24D4 DO 04D4
045E 2482 DO 0482
0460 2482 DO 0482
0462 1384 GO 0384
0464 7B01 VB+01
0466 A5FB I=05FB
0468 F065 V0:V0=MI
046A 50B0 SKIP;V0 EQ VB
046C 1446 GO 0446
046E 1384 GO 0384
0470 3000 SKIP;V0 EQ 00
0472 1288 GO 0288
0474 72FA V2+FA
0476 128A GO 028A
0478 6F03 VF=03
047A A5DF I=05DF
047C D123 SHOW 3MV1V2
047E A5E2 I=05E2
0480 D123 SHOW 3MV1V2
0482 FF18 TONE=VF
0484 A5E8 I=05E8
0486 D123 SHOW 3MV1V2
0488 A5E5 I=05E5
048A D123 SHOW 3MV1V2
048C 00EE RET
048E A5F1 I=05F1
0490 F01E I=I+V0
0492 F065 V0:V0=MI
```